Trait-focused internet-based prevention of common mental disorders in students

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Declaration

I confirm that the work presented in this thesis is my original work.

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Peter Musiat (May 18, 2012)

Abstract

Background: Many university students experience symptoms of depression, anxiety disorders, substance use disorders or eating disorders. This thesis aimed to develop and evaluate a trait-focused internet-based prevention programme for these disorders in students. The thesis comprises of three studies.

Study 1: In a cross-sectional study, 425 students were assessed on personality and mental health. A cluster analysis of indicators of mental health suggested two groups: one "high risk" group (20 per cent), who experienced symptoms of mental disorders; and the remaining students (80 per cent), who did not experience symptoms. Students at high risk showed higher trait anxiety, perfectionism and introversion/hopelessness.

Study 2: To investigate challenges of student life, a mixed-methods study combined a web survey and focus groups. In the web survey, students most frequently identified social, practical and academic challenges. The focus groups confirmed these challenges and suggested that stigma and the belief that support mechanisms at university are only for students with severe problems would hinder support seeking.

Study 3: Based on the findings from studies 1 and 2, a trait-focused internet-based cognitive-behavioural intervention was developed. This intervention included modules on perfectionism, low self-esteem, difficult emotions and anxiety. An active control intervention and a procedure for personalised feedback were developed. In a randomised controlled trial, the efficacy of the intervention compared to a control intervention was investigated in 1141 students, who were classified as high or low risk according to their personality. The trait-focused intervention reduced depression, anxiety and, to some extent, phobia-related avoidance and eating disorder symptoms in students at high risk.

Conclusions: These findings suggest that: (a) students at high risk of developing mental disorders can be identified; (b) high risk students report higher levels of emotional and health difficulties; and (c) the mental health of these students can be improved with an intervention targeting personality risk factors.

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Papers

Musiat, P., Hoffmann, L., & Schmidt, U. (2012). Personalised computerised feedback in E-mental health. *Journal of Mental Health*. in press. Epub ahead of print retrieved February 8, 2012, from http://informahealthcare.com/doi/abs/10.3109/09638237.2011.648347

Conference presentations

ANZAED Eating Disorders Conference 2010, Auckland, New Zealand
"Personality risk factors and comorbidity of eating disorder in college students." - oral paper presentation

INTACT Symposium 2011, Prague, Czech Republic
"Trait focused internet-based prevention of common mental health problems in university students." – oral paper presentation

Second NIHR Biomedical Research Centre and Unit Experimental Medicine Research Training Camp 2011, Ashridge, UK "Trait focused internet-based revention of common mental health problems in university students: a pilot study" – poster presentation

Institute Of Psychiatry PhD Research Student Showcase Event 2011, London, UK
"Trait focused internet-based prevention of common mental health problems in university students: a pilot study" – poster presentation

Declaration of the candidate's role in each of the studies

Chapter 1 – Introduction

This chapter presents a review of the literature in the field of student mental health, personality risk factors and internet-based prevention. All work was carried out by the candidate.

Chapter 2 – Personality risk factors of common mental disorders in university students

This study involved recruitment and data collection in a student sample. Web-development of the online assessment was carried out by an external contractor (Vandenberg E-Development Ltd) based on instructions by the candidate. All analyses were carried out by the candidate.

Chapter 3 – Mental health needs of university students

This study involved conducting focus groups with students. The groups were conducted with Helen Sharpe, PhD student at the Section of Eating Disorders, Institute of Psychiatry. Parts of the transcription of the audio recordings were undertaken by Katherine Damazer, research volunteer at the Section of Eating Disorders, Institute of Psychiatry. The remaining transcription and all analyses were carried out by the candidate.

Chapter 4 – The development of a trial of a trait-focused internet-based prevention programme for common mental disorders in university students

This chapter describes the intervention development. The literature of existing cognitive-behavioural treatments was reviewed by the candidate and each intervention module was drafted by the candidate. Feedback on the modules was provided by the supervisors, Prof. Janet Treasure, Prof. Andre Tylee, as well as students and volunteers from the Section of Eating Disorders, Institute of Psychiatry. Final versions of the modules were then written by the candidate. The feedback procedure (Section 4.6) was developed by the candidate. Published work associated with this section (Musiat, Hoffmann, & Schmidt, 2012) was written in conjunction with Lars Hoffmann, PhD student at Humboldt University, Berlin, and the primary supervisor.

Chapter 5 – A randomised controlled trial of a trait-focused internet-based prevention programme for common mental disorders in university students

This chapter involved testing the efficacy of an internet-based intervention in students. The technical realization of the online intervention was undertaken by an external contractor (Mirata Ltd) based on instructions by the candidate. Statistical advice was provided by Ulrike Naumann, expert statistician in the Biostatistics department at the Institute of Psychiatry, King's College London. All analyses were carried out by the candidate.

Chapter 1 - Introduction

1.1 Chapter scope

The overall aim of this thesis was to develop and evaluate an internet-based trait focused intervention preventing common mental health disorders in students. Personality traits were to be identified that contributed to the development of mental disorders in students to help in the identification of students at high risk. These traits were to be targeted in a web-based intervention for students.

The focus of the following chapter is threefold. In the first section, the literature on the mental health of university students is reviewed. The second section focuses on personality risk factors that have been associated with mental disorders commonly found in students. The third section reviews the literature on internet-based prevention of mental disorders in students. Due to the multiple topics covered in this introduction, the review of the literature is narrative rather than systematic. In the final section of this chapter, each study of this thesis is briefly outlined.

1.2 Challenges of higher education

Within the past decade, an increasing number of young adults have been studying at university. The British Universities and Colleges Admissions Service (UCAS) accepted close to 335,000 students in 1999, only ten years later this number had risen to almost 482,000 students marking a rise of 44 per cent (Universities and Colleges Admissions Service, 2010). Similar increases in university admissions can be observed in Germany (25 per cent, Statistisches Bundesamt Deutschland, 2011) and France (20 per cent, Plan Urbanisme Construction Architecture, 2007).

In addition to the increasing number of students, student mobility has dramatically increased over the past decades. That is, more students go abroad for tertiary education. The numbers vary across countries. Whereas only 19 per cent of European foreign students study outside the EU, 66 per cent of Asian foreign students study in either Europe or North America. The majority of foreign students are hosted by English speaking countries, such as the USA, UK and Australia (OECD, 2011).

During the transition from school to university, students are faced with a number of challenges. Many students move away from home, which requires them to adapt to a

new environment, live on their own or move into shared accommodation, take financial responsibility and manage the tasks of everyday living, such as grocery shopping and laundry. In addition, starting university is associated with an increased workload that requires the abilities of self-directed learning, prioritising and managing time (Royal College of Psychiatrists, 2011). At the same time, students have to build up new social networks and want to engage in social activities, which can conflict with the challenges above. With the majority of first year university students being between 17 and 25 years of age, the transition to university coincides with the transition from late adolescence to early adulthood, a stage which is often characterised by developing an identity, building long-lasting relationships, sharing intimacy and facing career decisions (Erikson, 1968).

However, it is not only the transition to university that confronts students with challenges. During their time at university, students experience different pressures at different stages. The increase in student numbers worldwide (see above) has increased the career pressures for students at university. In order to find employment after university, students have to compete with each other and achieve the best possible grades. In addition, they have to find other ways of distinguishing themselves through awards, prizes or through gaining additional experience in the form of internships or volunteering (Royal College of Psychiatrists, 2011). In contrast, for mature students (those aged over 25) entering university, for example after having been in a working environment for several years, the challenges differ. For them, the change of role from partner, carer, parent or financial provider of a family to student may pose difficulties. In addition, mature students often find it more difficult to build social relationships with their much younger peers at university. Lastly, adjusting to the workload and learning requirements of university is much harder for those that have been out of education for a longer period (Davies, Osborne, & Williams, 2002).

It has to be noted that most studies investigating challenges in students focus on the transition period to university. In addition, many of the studies on the topic go back several years (e.g. Fisher & Hood, 1987; Lu, 1994) and it is likely that, given the changes in student numbers, these challenges are subject to change. In general, more research is needed to understand current challenges beginning with the transition to

university up to the transition into working life, as well as their subjective experience of students at this time.

1.3 The mental health of students at university

Quantifying the occurrence of mental health problems in university students is difficult and largely depends on the definition of what constitutes "caseness" as well as the methods used to assess them. It is important to note that the age between 17 and 25 is associated with a rise in mental health problems irrespective of whether or not the individual attends university. Many mental disorders have their first onset before the age of 24 (Kessler et al., 2005). In the following section, two main questions will be addressed. The first question is to what extent symptoms of mental disorders can be observed in students. The second question addresses to what extent mental disorders according to the DSM-IV (American Psychiatric Association, 2000) or the ICD-10 (World Health Organization, 1993) occur in university students. Many studies use students as a convenience sample, however, studies presented in the following section were chosen for their intentional focus on the mental health of students.

1.3.1 Symptoms of mental disorders in students

Webb, Ashton, Kelly, and Kamali (1996) conducted one of the most significant studies of student mental health in the UK. With a cross-sectional design, these authors investigated the use of alcohol and drugs in 3,075 second-year students from 10 universities in the UK, and also assessed anxiety and depression. Only 11 per cent of students reported not consuming any alcohol. 61 per cent of male students and 48 per cent of females drinking alcohol exceeded "sensible" drinking levels (i.e. maximum 14 units per week for women, or 21 units for men), as defined by the Health Development Agency in the UK. Twenty per cent of male students and 10 per cent of female students reported hazardous drinking levels (i.e. more than 36 units per week for women, or 51 for men). Of all students, 59 per cent reported the use of any illicit drug and the most common reasons for taking drugs were pleasure, social pressure and anxiety/stress. Overall, 29 per cent of students in this study reported moderate to severe anxiety levels and 13 per cent of students reported potentially clinically severe depression levels. Female students had higher levels of depression and anxiety than males (Webb et al., 1996). The sample in this study was a random sample, but the data were assessed using

self-report measures during lectures. Hence it is possible that this study underestimates the rates of alcohol and drug use due to heavy users not attending lectures.

In a cross-sectional survey with 1129 students at four UK universities, psychological distress was assessed using an internet-based version of the CORE-10 (Connell & Barkham, 2007), a measure assessing symptoms of anxiety, depression, trauma and physical symptoms. In this study, 29 per cent of students scored within the clinical range (score > 10) and eight per cent of students reported moderate-to-severe or severe distress levels (Bewick, Gill, Mulhearn, Barkham, & Hill, 2008). It has to be noted that these data come from only four universities, which did not want to be identified. In addition, the authors approached more than twice the number of students, but only received a response from 49 per cent. This casts doubt on to whether these results are representative.

The findings above suggest that students experience phases of increased distress and anxiety and phases of low mood. From these studies, it is difficult to assess whether the symptoms persist over a prolonged period or whether they are specific to, for example, the transition to university. Another important question to address is whether these levels of mental health symptoms are typical for the transition from late adolescence into early adulthood or whether university students comprise a particularly vulnerable group. This question has been addressed in studies comparing students to non-student peers.

Roberts et al. (2000) investigated links between financial problems and health in a convenience sample of 482 students. The authors compared their results with population means for a similar age group and concluded that students reported higher impairment in general health and social functioning compared to that group. These impairments were associated with financial difficulties. Students in debt were also more likely to consider dropping out of their course. Due to the cross-sectional nature of the study, the authors note that it cannot be concluded whether financial difficulties are the cause or the result of reduced health.

In another study with 1,208 students from three UK universities, health was assessed with the Short Form 36 Health Survey (Jenkinson, Coulter, & Wright, 1993) and

compared this to normative data from young adults. On all eight dimensions of this questionnaire, students scored lower than the normative sample suggesting poorer health across all domains. The largest difference was observed on Role Limitation due to emotional problems. This scale indicates to what extent study, work and other activities are impeded by emotional problems. Thirty eight per cent of students reported having reduced the amount of study or work due to emotional problems and 21 per cent reported having achieved less than what they would have liked. In this study, the most common worries of students were related to "study or work problems" or financial difficulties (Stewart-Brown et al., 2000). However, in this study, the response rate was low and the authors note that the findings have to be interpreted with caution.

Due to the lack of representative studies with matched control groups, it remains somewhat unclear whether students are more affected by symptoms of mental disorders than non-students of the same age. However, the studies presented above do suggest that a significant proportion of students report levels of anxiety, depression and other symptoms of mental disorder, which affect wellbeing and put students at risk for developing mental disorder.

1.3.2 The prevalence of mental disorders in students

A cross-sectional study in the United States compared national survey data on the 12-month prevalence of mental disorders, substance misuse and help-seeking behaviour between university students and non-student peers of the same age. The authors adjusted the data to be representative for the United States and provided adjusted odds ratios to account for socio-demographic differences between students and non-students. The most common mental disorders in this sample were substance use disorders, mood disorders and anxiety disorders. Although the overall rates of mental illness did not differ between the two groups, the prevalence of specific disorders did. Alcohol misuse and dependence were more common in students (misuse: 7.9 per cent, dependence: 12.5 per cent) than in non-students (misuse: 6.8 per cent, dependence: 10.2 per cent), whereas nicotine dependence was less common in students (14.6 per cent vs. 20.7 per cent). Students reported fewer personality disorders (17.7 per cent vs. 21.6 per cent), anxiety disorders (11.9 per cent vs. 12.7 per cent) and affective disorders (10.6 per cent vs. 11.9 per cent). Regardless of whether or not individuals went to university, almost

half of the participants in this study met criteria for at least one DSM-IV disorder. However, it has to be noted that especially when adjusted for socio-demographic differences, the differences in prevalence were not significant. In this study about one in five individuals had received psychiatric help during the last year. The rates of treatment were slightly lower in the student sample (Blanco et al., 2008).

Eisenberg, Gollust, Golberstein and Hefner (2007) investigated the prevalence of anxiety and depression amongst undergraduate and graduate students at a public university in the United States. The sample consisted of 2,843 randomly selected students and the authors accounted for non-response bias. In undergraduate students, they reported prevalence rates of 13.8 per cent for depression and 6.1 per cent for anxiety. These rates were slightly lower in graduate students with 11.3 per cent for depression and 3.8 per cent for anxiety. However, in this study the Patient Health Questionnaire (Spitzer, Kroenke, & Williams, 1999) was used to assess anxiety and depression and it remains unclear whether the students assessed would have fulfilled the criteria for depression or anxiety according to the DSM-IV.

Surprisingly, the prevalence rates of depression in students are similarly high across cultures and study subjects. A recent study in Oman found prevalence rates of 27.7 per cent (Al-Busaidi et al., 2011). Rab, Mamdou and Nasir (2008) examined depression in female medical students in Pakistan with the Hospital Anxiety and Depression Scale (Snaith, 2003) and found a prevalence for depression of 19.5 per cent. In Egyptian nursing students, depression rates of 27.9 per cent were found (Amr, El-Gilany, El-Moafee, Salama, & Jimenez, 2011). A study with Canadian chiropractic students reported depression rates of 23.6 per cent (Kinsinger, Puhl, & Reinhart, 2011). It has to be noted that these studies investigated depression in health care subjects and it is possible that the rates differ in students in other disciplines.

A two-year study with students in the United States reported the prevalence for anxiety disorders as 4.8 per cent. In the two-year follow-up this number had increased to 7.0 per cent. In New Zealand medical students, anxiety was assessed using the Generalised Anxiety Disorder Questionnaire (GAD; Spitzer, Kroenke, Williams, & Löwe, 2006). In this study, 16.9 per cent of students reported a score higher than eight suggesting that they suffered from generalised anxiety disorder. Similarly to results from other

studies, female students reported higher rates of anxiety and depression (Samaranayake & Fernando, 2011). Pillay, Edwards, Sargent and Dhlomo (2001) investigated anxiety in first-year students at a university in South Africa with the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) and reported that 17.8 per cent of students scored in the severe range.

It is also important to mention here that a form of anxiety more specific to the university context is test anxiety. Test anxiety can be considered as a special form of general anxiety and refers to an extreme fear of poor performance in evaluative situations often occurring with cognitive difficulties (Friedman & Bendas-Jacob, 1997). The most recent model of test anxiety identifies four components: Tension, Worry, Bodily Symptoms and Test Irrelevant Thinking (Sarason, 1984). Worry and test-irrelevant thinking form a cognitive component of test anxiety, whereas tension and bodily symptoms form an emotional component (Deffenbacher, 1980). In addition to the psychological burden, academic performance can be affected by test anxiety. Although, a mild level test anxiety can positively affect performance, too high levels can decrease performance. Both the cognitive and the emotional components of test anxiety can negatively affect performance (Hong, 1999). Two models have been proposed for the impact of test anxiety on performance. The interference model suggests that test anxiety impedes performance in the test situation, in which the individual would otherwise be able to perform (Wine, 1982). The deficit model on the other hand suggests that individuals with high test anxiety have less effective study skills (Tobias, 1985).

One of the more frequently reported anxiety disorders amongst students is social phobia. According to the DSM-IV (American Psychiatric Association, 2000), social phobia is characterised by the "fear of social or performance situations in which embarrassment may occur" (p. 450). Exposure to such situations "almost invariably provokes an immediate anxiety response" (p. 450). The prevalence of social phobia was investigated with structured clinical interviews in 1,003 university students in Turkey. In this sample, a 12-month prevalence of 7.9 per cent was obtained. Similar rates of social phobia were reported in a sample of 413 Nigerian students with a 12-month prevalence of 8.5 per cent (Bella & Omigbodun, 2009), which is higher than the

prevalence in the general population (Gureje, Lasebikan, Kola, & Makanjuola, 2006). A study of 523 randomly selected Swedish students found that 16.1 per cent of participants fulfilled the criteria for social phobia (Tillfors & Furmark, 2007). Very different rates were found in a student sample (*N*=666) in South Australia. Depending on the cut-off used in the abbreviated version of the Social Phobia Inventory (Connor, Kobak, Churchill, Katzelnick, & Davidson, 2001), prevalence rates ranged from 7 per cent to 30 per cent (Wilson, 2005).

Eating disorders are known to have their onset during teenage years or early adulthood. The peak onset of anorexia nervosa is usually thought to be between 14 to 18 years, whereas bulimia nervosa has a somewhat later peak onset between age 16 and 21 (American Psychiatric Association, 2000). A retrospective survey investigating social class in anorexia suggested that anorexia is more common in higher social classes (McClelland & Crisp, 2001). Together with the age of onset, this suggests that students could be particularly at risk for developing eating disorders.

Early studies on the prevalence of bulimia in university students showed prevalence rates ranging from 0.6 per cent (Drewnowski, Hopkins, & Kessler, 1988) to 13 per cent (Halmi, Falk, & Schwartz, 1981). A more recent study of 5,021 randomly selected students found the prevalence for any eating disorder to be 13.5 per cent in undergraduate females and 3.6 per cent in undergraduate males (Eisenberg, Nicklett, Roeder, & Kirz, 2011). However, all of these studies have in common that a much higher proportion of students reported symptoms of eating disorders below the clinical threshold (for a review, see Stein, 1991). For example, in one study almost half of female students reported frequently experiencing episodes of binge eating (Schotte & Stunkard, 1987). In comparison, a study with students in Brazil reported the prevalence of binge eating disorder to be 12.9 per cent (Nicoli & Junior, 2011).

In summary, the evidence on the prevalence of mental disorders and their symptoms in students suggests that the most commonly observed disorders in the age group of 17-25 years of age and the university context are depression or other mood disorders, anxiety disorders, particularly specific phobias and generalised anxiety disorder, substance and alcohol abuse and dependence and eating disorders. For this reason these disorders are considered common mental disorders in students and the following sections will focus

on these disorders in particular. A large proportion of students do not seem to fulfil clinical criteria for mental disorders, but experience symptoms of these disorders. A caveat is that many of the presented studies did not use structured interviews to assess disorders.

1.4 Factors contributing to the development of mental disorders in students

At the beginning of this chapter, I described the challenges students face when they transition to university, such as moving away from home, the financial burden of studying, building a social network and managing stress and workload. The following section briefly looks at how these challenges relate to the mental health of students.

1.4.1 Financial stressors

With student fees rising, the impact of financial problems on student mental health has been the focus of a number of studies. Tyrrell (1992) asked 94 students to name perceived stressors and amongst the most frequently quoted stressors were financial worries. However, this study only assessed psychology undergraduates in one university and it is not clear whether the course or institution biases the results. In a study of 482 students at two major London universities, the relationship between the students' financial situation and their health was investigated. The majority of students (72 per cent) experienced some financial difficulties and more than 40 per cent of students reported being in debt. Using structural equation modelling, the authors concluded that financial difficulties were associated with more working hours outside university and a higher consideration of dropping out, with both factors negatively affecting health (Roberts et al., 2000). A more recent study in 352 medical students with similar methodology, however, did not find a direct relationship between the amount of debt and general health (Ross, Cleland, & Macleod, 2006). In conclusion, studies suggest that students commonly report money worries or financial difficulties including debt. Although they constitute a stressor, it remains unclear whether there is a direct link between financial problems and mental health.

1.4.2 Social stressors

During the transition to university students often have to build up a completely new social network, as they move home or enter a new environment. A study in 280 students

at Cardiff University suggested that 80 per cent of students that moved away from home into student accommodation experience homesickness (Stroebe, Van Vliet, Hewstone, & Willis, 2002). Symptoms of homesickness usually reduce with time, particularly if students have easy access to their home (Porritt & Taylor, 1981). Homesickness is associated with higher levels of depression (for a review, see Van Tilburg, Vingerhoets, & Van Heck, 1996) and obsessionality in students (Fisher & Hood, 1987). Another common consequence of homesickness and the changes in social network is the experience of loneliness. Loneliness describes feelings of being emotionally and socially isolated (Weiss, 1973). It is not surprising that international students experience loneliness to a much greater extent (Oei & Notowidjojo, 1990; Pearl, Klopf, & Satoshi, 1990) than local students, given the distance from home and potential language barriers. In a study of 89 undergraduate students, lonely individuals showed lower cardiac output (an indicator of cardiac activity) and reported poorer sleep (Cacioppo et al., 2002). High levels of loneliness and small social networks have been demonstrated to be associated with poorer response to antibodies of an influenza vaccine (Pressman et al., 2005). Although loneliness has been reported as a predictor of anxiety and depression in students, recent evidence suggests that this relationship is mediated by general health (Swami et al., 2007). It has to be noted that the studies presented above were all cross-sectional designs, so it remains unclear what are direct physical and psychological consequences of homesickness or loneliness.

1.4.3 Workload

Law (2007) looked at coursework involvement and exhaustion levels of students. Whereas certain levels of stress can positively affect performance, exhaustion is always associated with negative outcomes (Cordes & Dougherty, 1993). Law compared exhaustion levels of students to those of several occupations assessed in other studies and found that students showed the second highest levels after public accountants. Unsurprisingly, exhaustion was positively correlated with course involvement and workload and negatively correlated with the expected grade point. The US National College Health Assessment reported that many of the mental health symptoms described above can be attributed to stress and that stress is the factor with the highest impact on academic performance (American College Health Association, 2003). In combination with substance use and a lack of sleep, stress is assumed to promote the

development of depression (Voelker, 2004). These studies suggest that students have to deal with a very intense workload, which can contribute to feelings of exhaustion and affect mental health.

1.4.4 High risk behaviours

For many students, being away from home means an increase in freedom and a lack of parental control. Hence, it is not surprising that some students engage in a number of high risk behaviours such as taking drugs, heavy drinking or risky sexual behaviour. The use of alcohol and drugs in term of developing substance abuse disorders have been discussed above. However, the consumption of alcohol and drugs in female students is associated with another problem: sexual assault. Female students who regularly drink together with male students and are in their first two years at university are particularly at risk (White & Smith, 2001). Krebs, Lindquist, Warner, Fisher and Martin (2009) showed that especially the use of drugs at university increased the risk for female students to become victims of sexual assault whilst incapacitated. The authors also found that women with a prior history of sexual assault were at increased risk of further sexual assault and concluded that as a result of the previous assault, they engage in heavy drinking and drug use, increasing the risk for subsequent assault.

The previous section reviewed the literature on the mental health of students at university. It was shown that, particularly during the transition to university, students experience a number of challenges. These challenges are likely to change over time, although little is know about how they change. A large proportion of students seem to be affected by symptoms of mental disorders below the clinical threshold. The highest prevalences of mental disorders were observed for depression, anxiety disorders and substance use disorders. Compared to non-students at the same age, on balance students do not seem to be more prone to mental disorders. Several factors, such as financial and social stressors or workload seem to be associated with symptoms of mental disorders, but the direction of this association remains unclear. Most studies only looked at specific symptoms of mental disorders in isolation and more research is needed on how these symptoms are related in subclinical student samples. The next section will look at the role of personality in the development of mental health problems

and which personality traits are relevant in the development of common mental health problems in students.

1.5 Higher order personality factors and mental health

"Personality can be defined as consistent behaviour patterns and intrapersonal processes originating within the individual" (Burger, 2010, p. 4). Several approaches towards the classification of personality exist such as the psychoanalytic approach, the biological approach, the trait approach and the cognitive approach. In the trait approach, personality is constituted by a number of traits, which are dimensions of personality relatively stable across situations and time (Burger, 2010). Within this framework, researchers have used statistical methods (e.g. factor analysis) to identify core personality traits (e.g. Cattell, 1943; Digman, 1990; Goldberg, 1992). More recent understandings of personality try to integrate the different approaches, for example by identifying neurobiological correlates of traits. However, these more complex inter-disciplinary models of personality are beyond the scope of this thesis and will not be discussed.

One of the most influential factor structures of personality is the five-factor model by Costa and McCrae (Costa & McCrae, 1992). In their model, the five factors (also called The Big Five) defined as Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness constitute personality.

Neuroticism describes an individual's tendency to experience negative emotions such as fear, sadness, embarrassment, anger, guilt or disgust. Extraversion describes, to what extent an individual is sociable, assertive, active and talkative, energetic and optimistic. Openness refers to an active imagination, aesthetic sensitivity, and attentiveness to inner feelings, preference for variety, intellectual curiosity and independence of judgement. Individuals with high levels of Agreeableness are characterised by altruism and sympathy towards others and an eagerness to help. Finally, Conscientiousness describes someone's ability to control impulses or plans, and to organise and carry out tasks (Costa & McCrae, 1992). As the Big Five are the result of factor analytical statistics, they are considered as relatively independent and orthogonal dimensions of personality.

1.5.1 Neuroticism

The relationship between Neuroticism and mental health problems has been investigated in numerous studies. One study looked at neuroticism and depression in women (Boyce, Parker, Barnett, Cooney, & Smith, 1991). In this study, women with high levels of neuroticism were reported to have a risk for depression three times higher than those with low levels of neuroticism. Similar results have been found in male patients with depression (Clayton, Ernst, & Angst, 1994). Neuroticism is commonly referred to as trait anxiety (e.g. Schinka, Busch, & Robichaux-Keene, 2004). Hence, it is not surprising that there seems to be a link between high Neuroticism and the development of anxiety disorders. In a study with children, Muris, de Jong, and Engelen (2004) were able to demonstrate a link between neuroticism and anxiety symptoms. Clark, Watson, and Mineka (1994) reviewed the evidence on the link between affective disorders and Neuroticism and concluded that Neuroticism is a risk factor for anxiety disorders and depression and is associated with poor prognosis. However, it has to be noted that scales assessing neuroticism usually significantly overlap with symptoms of anxiety and depression. There is evidence suggesting that the impact of life stress is moderated by Neuroticism (Van Os & Jones, 1999). The role of Neuroticism in the development of substance abuse disorders is mixed, with some studies finding higher levels of Neuroticism in individuals suffering from substance abuse (Dubey, Arora, Gupta, & Kumar, 2010). In general, individuals with high levels of Neuroticism seem to have a vulnerability for mental health problems and research suggests that high Neuroticism is associated with comorbidity of psychiatric disorders (Khan, Jacobson, Gardner, Prescott, & Kendler, 2005). In eating disorders, Ghaderi and Scott (2000) found that individuals with a lifetime diagnosis of eating disorders showed higher levels of Neuroticism. Other studies support this relationship in non-clinical undergraduate students (Miller, Schmidt, Vaillancourt, McDougall, & Laliberte, 2006).

1.5.2 Extraversion

Eysenck formulated a theory about anxiety (1955) and postulated there to be a negative relationship between Extraversion and anxiety. Bull and Strongman (1971) investigated this hypothesis in 85 undergraduate students and found a small and negative correlation between the two variables. Similar results were observed in undergraduate students in India (De & Singh, 1972) and the United States (Fremont, Means, & Means, 1970).

Goodwin (2002) investigated the use of mental health services and found that Extraversion was associated with a decreased likelihood of service utilisation. The evidence base on the relationship between Extraversion and depression is limited. Although Extraversion seems to be associated with positive mood (e.g. Costa & McCrae, 1980; Furnham & Brewin, 1990; Wilson & Gullone, 1999), it is not fully clear how Extraversion contributes to the development of affective disorders (Clark et al., 1994). Studies examining the link between high levels of Extraversion and substance abuse have reached different conclusions. In a study in 187 students, Bruch (1997) found shyness (i.e. the lowest end of the Extraversion dimension) to be related to reduced drinking. Other studies did not confirm this relationship (Holroyd, 1978). Some studies reported smokers to have higher levels of Extraversion than non-smokers (e.g. Parkes, 1984). However, a distinction has to be made between the relationship between Extraversion and drinking levels and Extraversion and alcohol abuse. Increased drinking levels in individuals scoring high on Extraversion are related to the motivation to drink to experience intoxication of alcohol (Conrod, Petersen, & Pihl, 1997). Clinically relevant abuse of alcohol, on the other hand, seems more common in introverted individuals, suggesting that they use alcohol to cope with emotional difficulties (Conrod, Pihl, Stewart, & Dongier, 2000) and neurophysiological correlates support this hypothesis (Depue & Collins, 1999). A study on anorexia nervosa (AN) and the Big Five found that patients with AN are more introverted than healthy controls (Bollen & Wojciechowski, 2004). In their study on eating disorder symptoms in female undergraduate students, Miller, Schmidt, Vaillancourt and Laliberte (2006) concluded that the combination of high Neuroticism and low Extraversion is associated with eating problems in students.

1.5.3 Openness

Neuroticism and Extraversion have received the most attention out of the Big Five personality factors in research and it has been only more recently, that research has started looking at the second order personality traits, such as Openness, Agreeableness and Conscientiousness. In an older sample from a longitudinal aging study, Costa and McCrae (1992) found no correlation between depression and Openness. A study with close to 500 young adults at student age investigated the five-factor model of personality and DSM-III (American Psychiatric Association, 1987) axis I disorders. In this study,

high levels of Openness were associated with a lifetime diagnosis of substance abuse, any anxiety disorder and major depression (Trull & Sher, 1994). Wolfestein and Trull (1997) further examined the relationship between Openness (and its subfacets) and depression in undergraduate students. They confirmed the association between the two variables and narrowed it down to the subfacets Openness to Aesthetics and Openness to Feelings. Considering the characteristics of individuals high on Openness, it is not surprising that the relationship between Openness and substance abuse has been subject of numerous studies. Studies on undergraduate students found that high Openness increases the likelihood for marijuana use (Eisenman, Grossman, & Goldstein, 1980). Similar results have been found in individuals suffering from a diagnosed substance disorder (Sher, Bartholow, & Wood, 2000) and in a community sample (Flory, Lynam, Milich, Leukefeld, & Clayton, 2002). Compared to healthy controls, patients with anorexia nervosa show higher levels of Openness. Similar results have been found for individuals with bulimia nervosa (Ghaderi & Scott, 2000).

1.5.4 Agreeableness

Agreeableness seems to have a more protective character when it comes to mental health, in contrast to Neuroticism, Extraversion and Openness. In the study by Trull and Sher (1994) mentioned above, individuals with depression, any anxiety disorder or substance abuse all scored lower on Agreeableness than individuals without a diagnosis. However, it has to be noted that the discrepancies between the two groups are much less obvious than they are for Neuroticism and Extraversion. The results in substance use disorders have been confirmed in a community sample (Flory et al., 2002). Walton and Roberts (2004) found that students who did not drink any alcohol had the highest levels of agreeableness compared to moderate and heavy drinkers. One study on the Big Five investigated the relationship between personality, depression and suicide and found that low agreeableness is associated with higher suicide rates (McCann, 2010). Cuijpers, Van Straten, and Donker (2005) examined differences in trait profiles amongst a large sample of patients with anxiety or depression. In addition to confirming the results on the influence of Neuroticism, Extraversion or Agreeableness, these authors more interestingly found that both Neuroticism and Agreeableness were associated with comorbidity. Patients with high levels of Neuroticism or low levels of Agreeableness were more likely to have multiple mental health diagnoses. The only study which has

found a relationship between Agreeableness and eating disorders was the study by Ghaderi and Scott (2000), which suggested that individuals with eating disorders score lower on Agreeableness than healthy controls. However, Bollen and Wojciechowski (2004) found that Agreeableness differentiates between the binge-purging and the restricting subtype of anorexia nervosa.

1.5.5 Conscientiousness

In a large clinical sample, high levels of Conscientiousness were associated with generalised anxiety disorder whereas lower levels were associated with major depression (Rosellini & Brown, 2011). In Trull and Sher's study (1994) Conscientiousness was lower in individuals with major depression, any anxiety disorder or substance abuse, compared to individuals without a diagnosis. However, not all studies confirm the impact of Conscientiousness on mental health (Bienvenu et al., 2001). A relatively surprising result was found by Rector, Hood, Richter and Bagby (2002). They found that individuals with obsessive compulsive disorder had lower Conscientiousness scores than healthy individuals. This was unexpected as the characteristics of conscientious individuals are often associated with obsessive-compulsive symptoms (also see 1.6.5). Similarly surprising is that patients with eating disorders are reported to have lower levels of Conscientiousness than healthy controls (Bollen & Wojciechowski, 2004; Ghaderi & Scott, 2000). This suggests that Conscientiousness must not be confused with obsessionality or perfectionism, but describes a different construct.

Despite the numerous correlates of the five dimensions of personality, it has to be noted that the Big Five have been subject to criticism. One of the main arguments by the critics of the Big Five is the fact that the traits do not predict behaviour well (Mischel, 1996). Endler and Hunt Endler and Hunt (1966) argued that for predicting behaviour, having information about the situation is better than having information about the individual. There is a consensus amongst researchers today that the behaviour in a situation is the result of a person-situation-interaction (Funder, 2009). Finally, there is relatively little evidence for the cross-situational stability of traits. A very early study on personality traits investigated honesty in children. Surprisingly, very little correlation was found between the different measures assessing the same trait (Hartshorne, May, Maller, & Shuttleworth, 1928).

In summary, there is substantial evidence supporting the idea that people suffering from mental health problems exhibit differences on the five factors of personality compared to healthy individuals. Particularly Neuroticism and Introversion (i.e. low Extraversion) seem to be vulnerability factors for the development of depression, anxiety disorders, substance abuse problems and eating disorders. Although research on the remaining factors is considerably smaller, high levels of Agreeableness are associated with fewer mental health problems.

1.6 Lower order personality factors and mental health

The research on personality and mental health supports the idea that specific personality factors put some people at an increased risk for developing mental health problems. Risk factors are factors that correlate with and precede a certain outcome (Kraemer et al., 1997). Considering the results outlined above, higher order factors such as the Big Five lack specificity when it comes to the diagnosis of mental health problems. For that reason, research has focused on lower order personality factors, some of which will be outlined below, together with their role in the development of mental disorders.

The field of alcohol dependency disorders was the first to look specifically into the role of personality in the aetiology of the disorder. It only constitutes one example of how the investigation of personality can contribute to the understanding of a disorder; there is no universal system that can be applied across all mental disorders. However, given the high comorbidity of substance abuse disorders with depression and anxiety (Regier et al., 1990), and eating disorders, particularly bulimia nervosa (Bulik et al., 2004), it seems sensible to explore to what extent these traits might play a role in the development of these common mental disorders.

In the treatment and research of alcohol dependence disorders, clinical subgroups of sufferers have emerged with different pathways into the disorder. Cloninger (1987) described three personality dimensions that differentiate between an individual's response to alcohol. The three dimensions included reward dependence, harm avoidance and novelty seeking. People with high reward dependence can be described as helpful, warm and sympathetic. Harm avoidance refers to being cautious, inhibited and shy. The concept of novelty seeking includes being easily bored and a liking of novel and intense experiences. Each dimension is associated with its own brain system and

neuromodulators (Cloninger, 1987). In practice, however, Cloninger's models often failed to fully explain the variance observed in drinkers, mainly due to the lack of considering motivational aspects of drinking (Conrod et al., 2000).

Cooper (1994) proposed a motivational model for drinking in teenagers. According to this model, four motivational factors can be identified: coping, conformity, social and enhancement. Coping motivation describes drinking with the intention to improve mood or forget worries. Conformity relates to drinking motivated by peer pressure. Social motives describe drinking in social situations and enhancement describes drinking with the intention to feel good, excited or high. Although the model originally described motivation for drinking, it has been shown to apply to the use of marijuana (Simons, Correia, Carey, & Borsari, 1998), smoking (Tate, Pomerleau, & Pomerleau, 1994) and the use of other drugs (Cooper, 1994).

Based on the findings on personality and motivation in substance abuse, Conrod et al. (2000) developed a model for classifying female substance abusers. The model by Conrod et al. (2000) includes four personality risk factors and their corresponding motivational determinants of drug use and abuse, namely anxiety sensitivity, introversion-hopelessness, sensation seeking, and impulsivity. In the following section, the four personality factors are described along with the research on associated mental health problems.

1.6.1 Anxiety sensitivity

Anxiety sensitivity describes the fear of anxiety related symptoms, such as increased heart rate, chest pain or feelings of dizziness or sweatiness. The fear of these symptoms arises from the belief that they are associated with physical, mental or social harm. Anxiety sensitivity is different from trait anxiety, which in the hierarchical model of trait anxiety by Lilienfeld, Turner, and Jacob Lilienfeld, Turner, and Jacob (1993) consists of anxiety sensitivity, injury sensitivity and the fear of negative evaluation. Hence, trait anxiety describes the tendency to react with anxiety in a variety of situations in general whereas anxiety sensitivity only relates to the fear of experiencing anxiety symptoms. This model of trait anxiety is empirically supported (Taylor, 1995). With anxiety sensitivity being a component of trait anxiety, it can be considered as a stable trait variable.

The fear of anxiety-related symptoms creates the need for individuals with high levels of anxiety sensitivity to develop coping mechanisms for this fear. Through unhelpful coping strategies (e.g. avoidance) for some individuals this can potentially spiral in the development of an anxiety disorder. Many studies have identified another harmful strategy for dealing with fear in individuals with high levels of anxiety sensitivity: the use of alcohol or substances.

Earlier in this chapter, a model for motivational factors of drinking (and the use of other substances) was described. Cooper (1994) distinguished between coping, conformity, social and enhancement motives. Anxiety sensitivity relates to coping motives for using alcohol and substances and numerous studies have shown increased coping motives in individuals with high levels of anxiety sensitivity (for a review see Stewart, Samoluk, & MacDonald, 1999). Hence, it is not surprising that higher drinking levels have been identified in university students with high levels of anxiety sensitivity (Stewart, Peterson, & Pihl, 1995) as well as higher rates of problem drinking (Conrod, Pihl, & Vassileva, 1998). The increased rates among individuals with high anxiety sensitivity are often associated with the belief that drinking reduces the symptoms of anxiety (Burke & Stephens, 1999).

Numerous studies have investigated the role of anxiety sensitivity as a personality risk factor in the development of anxiety disorders. In a cross-sectional study of 220 undergraduate students, anxiety sensitivity was assessed together with the history of panic attacks. In comparison with trait anxiety, anxiety sensitivity was a better predictor of previous panic attacks (Lilienfeld, 1997). A review of the literature on non-clinical "panickers" suggested that anxiety sensitivity differentiates between individuals with no history of panic attacks and those who have experienced panic attacks before (Norton, Cox, & Malan, 1992). However, the important question is whether anxiety sensitivity plays a causal role in the development of panic attacks. In an experimental study investigating how individuals with different anxiety sensitivity levels respond to induced panic symptoms, it was hypothesised that anxiety sensitivity should predict the experience of panic symptoms. Results from this study suggested that this was not the case (Struzik, Vermani, Duffin, & Katzman, 2004).

In individuals with social anxiety, higher levels of anxiety sensitivity have been identified (Taylor, Koch, & McNally, 1992). Studies with college students demonstrated that high anxiety sensitivity and social anxiety are often related to a history of childhood teasing (Roth, Coles, & Heimberg, 2002). Interestingly, a study attempting to incorporate interoceptive exposure to reduce the fear of anxiety-related physical sensations in an intervention for social anxiety, failed to produce better results than an intervention without this component (Sailer & Hazlett-Stevens, 2008).

Anxiety sensitivity has only recently received attention in eating disorder research. Davey and Chapman (2009) investigated the relationship between eating disorder symptomatology and disgust. When controlling for trait anxiety or anxiety sensitivity, disgust did not predict eating disorder symptomatology, which suggests that instead of being an independent risk factor for eating disorders, disgust may be related to other factors, such as anxiety sensitivity or trait anxiety. However, it is important to note that this study was conducted in a non-clinical population.

In a clinical (i.e. acutely ill with an eating disorder) and non-clinical sample, anxiety sensitivity, depression, impulsivity and eating disorder cognitions and behaviours were assessed. Anxiety sensitivity significantly predicted bulimia and drive for thinness as assessed with the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983) when controlling for depression, trait anxiety and depression (Anestis, Holm-Denoma, Gordon, Schmidt, & Joiner, 2008).

However, Anestis, Selby, Fink, and Joiner (2007) postulated that the relationship between anxiety sensitivity and bulimic symptoms is mediated by tolerance to distress and conducted a study investigating this hypothesis. Two hundred psychology undergraduate students completed self-report measures on eating disorder symptomatology, anxiety sensitivity, urgency and depression. A regression analysis revealed that the effect of anxiety sensitivity on bulimic symptoms disappeared when distress tolerance was entered into the model.

1.6.2 Introversion/Hopelessness

Introversion (i.e. low Extraversion) in the context of the Big Five was described earlier in this chapter. As discussed, introverts are more likely to suffer from depression or

substance abuse. One of the neurophysiological correlates of introversion is a sensitivity to punishment, which itself is associated with a preference for intoxicating substances (Gray, 1970). It is important to note that the authors suggesting the four dimensions with regard to substance use (Conrod et al., 2000) do not elaborate on why this dimension includes introversion and hopelessness. In the measure used to assess the four dimensions (Woicik, Stewart, Pihl, & Conrod, 2009), questions primarily address feelings of hopelessness, such as not looking positively towards the future.

1.6.3 Sensation Seeking

Sensation Seeking or novelty seeking was first described by Marvin Zuckerman and refers to "a trait defined by the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience" (Zuckerman, 1994, p. 27). According to Zuckerman, Sensation Seeking has four sub-dimensions: thrill and adventure seeking, experience seeking, disinhibition and boredom susceptibility. Individuals high on Sensation Seeking seek for a certain level of arousal and therefore engage in stimulating behaviour. Although taking risks is associated with Sensation Seeking, the risk itself is not the motivator for behaviour (Zuckerman, 1994). In the context of the five-factor model of personality, Sensation Seeking is associated with high Extraversion and high Openness to Experience (Aluja, García, & García, 2003).

Considering the nature and description of the trait, it is not surprising that individuals high on Sensation Seeking are more likely to engage in using substances or alcohol. Roberti (2004) reviewed the behavioural and biological correlates of Sensation Seeking and some of the findings from this review are outlined below. In a study with university students, Sensation Seeking was positively correlated with drinking levels (Cohen & Fromme, 2002). Earleywine and Finn (1991) reported that Sensation Seeking accounts for the relationship found between behavioural disinhibition and the consumption of alcohol. A longitudinal study on the drug use of adolescents suggested that Sensation Seeking predicts the frequency of later marijuana use (Donohew et al., 1999). However, as outlined above people suffering from substance dependence are a heterogeneous group. Hence it is no surprise that not all individuals suffering from some form substance abuse are Sensation Seekers. Scourfield, Stevens, and Merikangas (1996)

found that only individuals suffering from substance abuse alone showed high levels of Sensation Seeking, whereas comorbid patients had lower levels.

1.6.4 Impulsivity

Impulsivity is often defined as "as a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individuals or to others" (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001). The most commonly used self-report measure assessing impulsivity is the Barratt Impulsiveness Scale (Barratt, 1959). Barratt initially assumed impulsivity to be one-dimensional, but with the development of multiple revisions of the measure the view has shifted towards impulsivity being a multidimensional construct. A factor structure that has been consistently found in the literature is a three-factor structure including Cognitive Impulsiveness, Motor Impulsiveness, and Non-Planning Impulsiveness (e.g. Barratt, 1985; Patton, Stanford, & Barratt, 1995). Cognitive Impulsiveness refers to the tendency to make quick decisions, Motor Impulsiveness describes acting without thinking and Non-Planning Impulsiveness includes a lack of forethought.

Numerous studies have shown high levels of impulsivity in people using or being dependant on alcohol or drugs. Individuals with high impulsivity have been shown to drink more alcohol and are more likely to suffer from alcohol dependence. In addition, early-onset drinkers are more impulsive than late-onset drinkers (Dom, D'Haene, Hulstijn, & Sabbe, 2006). Benjamin and Wulfert (2005) investigated binge eating and heavy drinking in female university students and found impulsivity to be associated with binge eating or drinking (but not both). However, a very recent study on impulsivity and drinking in university students suggested that the relationship between trait and behaviour might be moderated by positive expectations about drinking (Carlson & Johnson, 2012). Lane, Moeller, Steinberg, Buzby and Kosten (2007) investigated the performance of cocaine users in an inhibition task and showed that compared to controls, individuals dependent on cocaine had higher levels of impulsivity and performed less well in the task.

With the exception of obsessive-compulsive disorder, only little research is available investigating the relationship between anxiety disorders and impulsivity. When Barratt

originally developed his Barratt Impulsiveness Scale, he assumed that anxiety and impulsivity were independent and orthogonal and studies supported this idea (Barratt, 1959). A study comparing impulsivity between individuals with obsessive-compulsive disorder, panic disorder, social phobia and healthy controls showed elevated impulsivity levels across the anxiety disorders compared to controls. No differences were found in impulsivity levels between anxiety disorders (Summerfeldt, Hood, Antony, Richter, & Swinson, 2004).

Some studies found an association between higher levels of impulsivity and mood disorders. Van Den Eynde et al. (2008) investigated the effect of quetiapine (an antipsychotic drug) on impulsivity and affective symptoms in patients with borderline personality disorder. In this study, affective symptoms were associated with higher impulsivity. Similar results were found in patients with mood disorders, who had higher levels of impulsivity than healthy controls (Peluso et al., 2007). Impulsivity in patients with mood disorders seems to play a particular role in suicide attempts. In a study on patients with major depression, those who had previously undertaken a suicide attempt reported higher impulsivity scores than patients who had never attempted suicide (Corruble, Damy, & Guelfi, 1999), suggesting that the combination of affective symptoms and impulsivity increases the likelihood for suicide attempts (Soloff, Lynch, Kelly, Malone, & Mann, 2000). Compared to individuals with major depression, particularly manic and mixed bipolar patients show higher levels of impulsivity (Swann, Steinberg, Lijffijt, & Moeller, 2008).

In a study with women suffering from bulimia or anorexia nervosa, those with bulimia reported higher impulsivity than those with anorexia. However, compared to healthy women of similar age, individuals with bulimia neither had higher impulsivity scores nor was impulsivity related to severity of the illness (Fahy & Eisler, 1993). The authors also showed that higher impulsivity is not associated with poorer prognosis in BN, a finding that had been previously reported by Sohlberg, Norring, Holmgren and Rosmark (1989). Wonderlich, Conolly and Stice (2004) examined impulsivity as a risk factor in the development of eating disorders. In their study, behavioural correlates of impulsivity predicted the onset of eating disorder behaviours but not impulsivity itself. Impulsivity seems to be associated with comorbidity of substance abuse in both anorexia

and bulimia (Wiederman & Pryor, 1996). Dawe and Loxton (2004) reviewed the literature on impulsivity in substance abuse and eating disorders and suggested that impulsivity is comprised by at least two factors, which can be labelled reward sensitivity and rash spontaneous impulsivity. The authors propose that in binge eating reward sensitivity affects the attention towards food and cravings, whereas rash spontaneous impulsivity contributes to a loss of control over cravings or during bingeing.

1.6.5 Perfectionism

Another personality characteristic beyond the Big Five that has attracted attention in relation to the development of mental health problems is perfectionism. Early definitions considered perfectionism to be a one-dimensional construct (e.g. Burns, 1980), however, within the last two decades the perception has changed favouring a multi-dimensional construct. For example, in their definition of perfectionism, Flett and Hewitt (2002) distinguished between three types of perfectionism: self-oriented perfectionism, other-oriented perfectionism and socially prescribed perfectionism. Self-oriented perfectionism refers to having unrealistically high and self-imposed standards associated with self-criticism and problems with accepting mistakes. Other-oriented perfectionism describes the tendency to have unrealistically high standards for others and insisting they meet those standards. Finally, socially prescribed perfectionism refers to the belief that others impose extremely high standards, which if met will result in approval by these others. Another very influential conceptualization of perfectionism was developed by Frost, Marten, Lahart and Rosenblate (1990), who identified five dimensions of perfectionism, namely Concern over Mistakes, Doubts about Action, Personal Standards, Parental Expectations, Parental Criticism and Organization. The dimension Concern over Mistakes refers to difficulties with making mistakes or failing at a task. Doubts about Action describes to what extent an individual has doubts about doing or having done things right. In the Personal Standards dimension, the individual's standards are put in relation to other people's standards. Parental Expectations and Parental Criticism comprise someone's perception of their parents having high expectations and being overly critical. Organization refers to a preference for order and organization.

Amongst the Big Five, the trait most obviously linked with perfectionism is conscientiousness capturing an individual's ability to plan and organise tasks, and the tendency to be careful, self-disciplined and deliberate. Of studies investigating perfectionism and the Big Five factors of personality, most found Neuroticism and Conscientiousness to be positively correlated with perfectionism (e.g. Enns, Cox, & Clara, 2005; Sherry, Hewitt, Flett, Lee-Baggley, & Hall, 2007). High levels of Neuroticism are associated with high socially prescribed perfectionism, whereas Conscientiousness is positively associated with self-oriented perfectionism. Rice, Ashby and Slaney (2007) assessed perfectionism with both major perfectionism measures (Flett, Hewitt, & De Rosa, 1996; Frost et al., 1990) and the Big Five using the NEO-FFI (Costa & McCrae, 1992) in university students. With regard to the Frost et al. model of perfectionism, Neuroticism was positively correlated with Concern over Mistakes, Parental Criticism and Doubts about action. Conscientiousness was positively correlated with Personal Standards and Organization and negatively with Concern over Mistakes and Doubts about Action. A small, but significant association was also found between Agreeableness and Concern over Mistakes as well as for Extraversion and Doubts about Action. In both cases, higher Agreeableness/Extraversion was associated with lower perfectionism. Regarding the model of perfectionism by Flett and Hewitt (2002), the authors confirmed the results outlined above.

Several studies investigated the link between perfectionism and psychopathology. Shafran and Mansell (2001) reviewed the literature for both models of perfectionism outlined above and several disorders. The findings are briefly outlined below.

Across studies with depressed patients and students, perfectionism showed a stable association with depressive symptoms. In particular, socially prescribed perfectionism correlates with depression scores (e.g. Enns & Cox, 1999; Hewitt & Flett, 1991). Although some studies show an association between self-oriented perfectionism and depression, this was not found in a student sample (Flett, Hewitt, Blankstein, & O'Brien, 1991).

In anxiety disorders, patients show higher levels of Concern over Mistakes as well as Doubts about Action from the Frost et al. model of perfectionism (Antony, Purdon, Huta, & Swinson, 1998). Particularly social phobia seems strongly linked to high levels

of perfectionism. Socially prescribed perfectionism, Concern over Mistakes and Doubts about Action have been found to be correlated to social anxiety (Saboonchi, Lundh, & Öst, 1999). Similar results were also obtained in student samples and students scoring highly on socially prescribed perfectionism showed greater loneliness, shyness, and lower self-esteem (Flett et al., 1996). However, no differences were observed with regard to self-oriented and other-oriented perfectionism between social phobia, panic disorder and obsessive-compulsive disorder (Antony et al., 1998).

Perfectionism is considered a risk factor for the development of obsessive-compulsive disorder (Emmelkamp et al., 1997). The symptomatology of obsessive-compulsive disorder is best captured in the Doubts about Action subdimension of the Frost et al. model of perfectionism. It is no surprise that patients suffering from the disorder score high on this dimension, as some of the items were directly taken from the Maudsley Obsessional Compulsive Inventory (Hodgson & Rachman, 1977). However, studies with patients demonstrated that they show elevated levels of Concern over Mistakes in addition to the increased Doubts about Action (Antony et al., 1998). In students, high levels of perfectionism, particularly Concern over Mistakes and Doubts about Action, are associated with subclinical obsessive-compulsive symptoms (Frost et al., 1990).

In eating disorders, perfectionism is not only part of the symptomatology, but also has been included in cognitive theories of the maintenance of eating disorders (e.g. Fairburn, 1997) as a mediator between weight and shape concerns and dieting. Slade (1982) considers perfectionism to be essential for the development of anorexia nervosa. Compared to healthy controls, patients with anorexia score higher on perfectionism (Bastiani, Rao, Weltzin, & Kaye, 1995) and remain high (and above patients with anxiety) even after recovery (Srinivasagam et al., 1995). In a study on the role of perfectionism in eating disorders symptomatology in undergraduate students, Minarik and Ahrens (1996) found Concern over Mistakes and Doubts about Action to be correlated to sub-threshold eating disorder symptoms. Other studies found socially prescribed perfectionism to be associated with dieting, a desire to be thinner, disordered eating patterns, body image avoidance and reduced self-esteem (Hewitt, Flett, & Ediger, 1995).

1.6.6 Self-esteem

Another lower order personality risk factor that has been discussed extensively with regard to the development of common mental disorders is self-esteem. Global self-esteem can be regarded as an "individual's positive or negative attitude toward the self as a totality" (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995, p. 141). Although some authors have suggested that self-esteem is a multidimensional construct (e.g. Marsh & Shavelson, 1985), the focus of the following section will be on the relationship between global self-esteem and mental health. The difference between higher order and lower order personality factors is particularly prominent in self-esteem. Although the evaluative component of the self is considered as an essential part of an individual's personality (Allport, 1937), self-esteem fluctuates across situations and time (Kernis & Waschull, 1995). Hence, self-esteem can be considered to be the result of an evaluation process in which a stable level of self-esteem is affected by situational factors (Leary & Baumeister, 2000). This evaluation process also allows for self-esteem to be altered in interventions (e.g. Dalgas-Pelish, 2006). Support for the stability of self-esteem as a trait also comes from a study suggesting that about 30 per cent of the variance in self-esteem can be explained through genetic differences (Kendler, Gardner, & Prescott, 1998).

Probably the most comprehensive investigation of the relationship between self-esteem and the Big Five was conducted by Robins, Tracy, Trzesniewski, Potter, and Gosling (2001). In an internet-based study, the authors assessed self-esteem and personality in over 320,000 individuals. The found a correlation of .50 for self-esteem and emotional stability (i.e. low Neuroticism). Self-esteem was also positively correlated with Extraversion (.38) and Conscientiousness (.24). Although Agreeableness and Openness were also positively associated with self-esteem, the correlation disappeared when controlling for social desirability (Robins, Tracy, et al., 2001). With this study, the authors mainly confirmed the results of previous studies in university students (Robins, Hendin, & Trzesniewski, 2001), which found a high negative correlation between Neuroticism and self-esteem (-.70), and positive correlations between self-esteem and Extraversion (.41), Agreeableness (.23), Conscientiousness (.28) and Openness (.16).

Whereas high self-esteem is considered a protective factor with regard to mental health, low levels of self-esteem pose a non-specific risk factor for the development of internalising disorders, such as depression, anxiety and eating disorders, or externalising disorder, such as substance use disorders (Mann, Hosman, Schaalma, & De Vries, 2004). Self-esteem is a predictor for happiness (Furnham & Cheng, 2000) and academic achievement (Marsh & Yeung, 1997). Low self-esteem has been commonly reported to be associated with depressive mood (Patton, 1991) and depressive disorders (Rice, Ashby, & Slaney, 1998). However, it has to be noted that many of the studies use correlational designs, leaving it unclear which role self-esteem plays in the development of depressive disorders. A prospective study in young adults suggested that low self-esteem was associated with later onset of major depressive disorder (Wilhelm, Parker, Dewhurst-Savellis, & Asghari, 1999).

A similar relationship between self-esteem and mental health has been observed in anxiety disorders. There is an abundance of correlational studies showing that individuals with anxiety disorders have lower self-esteem than healthy controls (e.g. Ehntholt, Salkovskis, & Rimes, 1999). In individuals that do not fulfil criteria for anxiety disorders, low self-esteem is associated with symptoms of anxiety disorders (Beck, Brown, Steer, Kuyken, & Grisham, 2001). High levels of self-esteem on the other hand may constitute a protective factor with regard to anxiety (Pyszczynski, Greenberg, Solomon, Arndt, & Schimel, 2004). Prospective longitudinal studies on self-esteem and anxiety disorders, however, are lacking.

In clinical populations of alcoholics, women are reported to have lower self-esteem than male alcoholics or healthy women (Beckman, 1975). However, this effect may be a result of the fact that women are less likely to seek help for drinking problems (Thom, 1986). Overall, the evidence on the relationship between self-esteem and substance use disorders is inconclusive. In smoking, correlational studies have shown a relationship between smoking and low self-esteem (Botvin, Baker, Goldberg, Dusenbury, & Botvin, 1992; Crump, Lillie-Blanton, & Anthony, 1997). However, these studies do not allow any conclusions about causality and were often conducted with non-representative samples. A prospective longitudinal study in 8,206 adolescents did not show a relationship of self-esteem with the onset of heavy drinking, the use of marijuana or

other illicit drugs (Kandel, Kessler, & Margulies, 1978). Other longitudinal studies found self-esteem to have only little predictive value when it came to predicting the onset of substance use in adolescents (e.g. Dielman, Campanelli, Shope, & Butchart, 1987; Olmstead, Guy, O'Mally, & Bentler, 1991).

In eating disorders, low self-esteem is often part of the clinical presentation of patients with anorexia nervosa or bulimia nervosa (e.g. Weinreich, Doherty, & Harris, 1985; Williams et al., 1993), which led to the hypothesis that self-esteem is a risk factor in the development of these disorders (Button, 1990). In the first prospective study on self-esteem and eating disorders (Button, Sonuga-Barke, Davies, & Thompson, 1996), the authors assessed self-esteem in 594 school girls aged 11 to 12. At baseline, low self-esteem was associated with concerns over being overweight (Button, 1990). A follow-up was conducted after four years in the same sample and the authors found that girls with low self-esteem at early puberty were more likely to develop eating problems (Button et al., 1996).

This section presented an overview of higher and lower order personality risk factors that have been associated with the development of common mental disorders as identified in the previous section. Amongst the Big Five, particularly Neuroticism and Extraversion showed numerous associations with mental disorders. Lower order personality factors such as perfectionism, anxiety sensitivity, impulsivity or self-esteem also seem to play a role in the development of depression, anxiety disorders, substance use disorders, eating disorder or symptoms of these disorders. There is an abundance of cross-sectional and correlational studies showing association between particular personality traits and symptoms of mental disorders. Authors of these studies imply that the investigated trait constitute risk factors, considering their stability and heritability. However, prospective longitudinal studies, which would allow such conclusions, are actually sparse.

A further caveat of the presented studies is that they only looked at personality within a particular conceptualisation of personality (e.g. the Big Five) or at individual factors (e.g. perfectionism, self-esteem). Although this makes sense from a theoretical point of view, it fails to address the fact that many higher or lower order personality factors are overlapping. Particularly with regard to mental health, this overlap could provide

valuable insight into the aetiology of mental disorders. More research is needed looking at multiple personality traits and mental health.

1.7 A vulnerability-stress model of common mental disorders in students

Vulnerability-stress models play an important role in understanding psychopathology. Although stress is considered to be an important factor in the development of mental disorder, not all individuals that are exposed to life stressors (e.g. traumatic events or difficulties) develop mental disorders (e.g. post traumatic stress disorder) (Monroe & Simons, 1991). This observation led to the notion that individual predisposing factors (vulnerability) combine with the response to stressors in triggering the development of mental disorders (Ingram & Luxton, 2005). Given the comorbidity of common mental disorders in students and the fact that several personality risk factors are shared between the disorders, a vulnerability-stress model for the development of these disorders was developed and is presented in Figure 1.1.

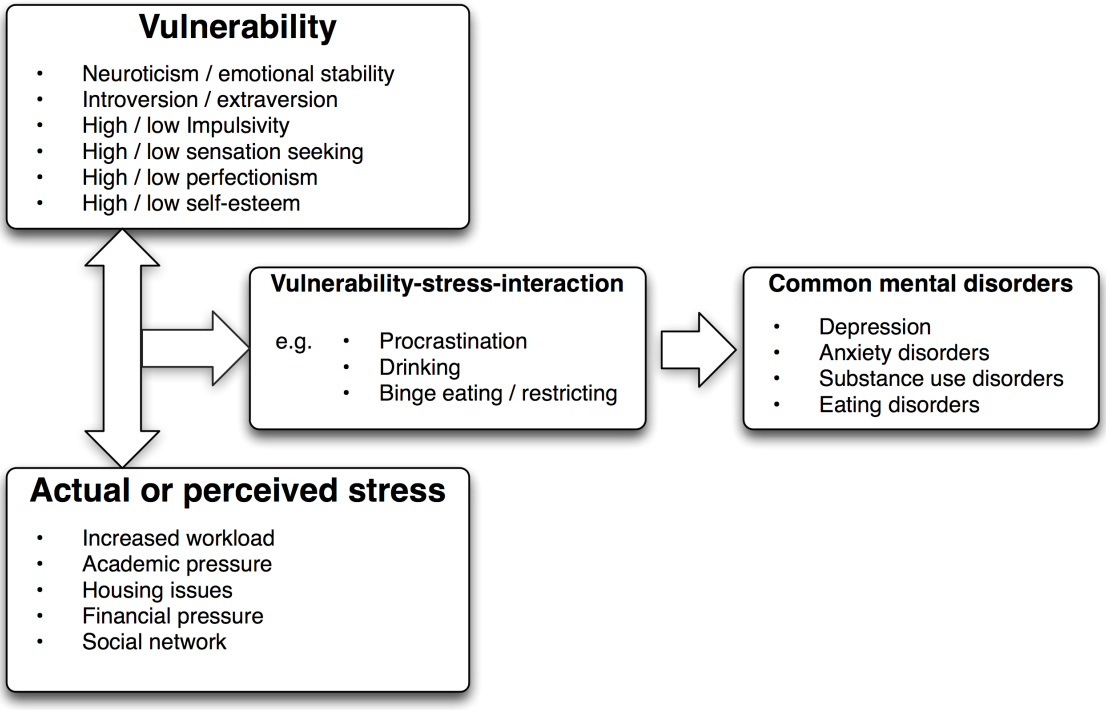

Figure 1.1: A vulnerability-stress model for common mental disorders in students

According to Ingram and Luxton (2005), stress can be defined as "life events (major or minor) that disrupt those mechanisms that maintain the stability of individuals' physiology, emotion, and cognition." (p. 33). In this model, stress is represented by the

factors identified in the literature as stressors for students at university. It is important to note that not every student necessarily experiences these stressors as stressful. What constitutes a disruptive event is the result of an appraisal process (Monroe & Simons, 1991) and the tendency to perceive situations as more stressful can be influenced by vulnerability factors. Vulnerability describes a "predispositional factor, or set of factors, that makes possible a disordered state" (Ingram & Luxton, 2005, p. 34). Vulnerability factors furthermore have to precede the disorder (Ingram & Luxton, 2005). In this model, personality traits constitute vulnerability in students. Personality traits are considered to be normally distributed in a population and the scales used to assess these traits are designed with that in mind. For most traits, it is the extreme expression of a trait (i.e. very high or very low) that is associated with psychopathology. For that reason, the extreme expressions of a trait are specified in the model.

Different principles for the interaction between vulnerability and stress can be distinguished. In additive models, the combined effect of vulnerability and stress contribute to the development of the disorder, whereas in ipsative models, a high expression of one factor (e.g. vulnerability) can compensate for a low expression of the other factor (Monroe & Simons, 1991). Although the relationship between the two factors in this model is beyond the scope of this thesis, it can be assumed that ipsative relationship between vulnerability and stress in students exists. The empirical studies in this thesis look at particular aspects of this model in more detail.

1.8 Internet-based prevention

The aim of this thesis is to develop an internet-based prevention programme for university students addressing common mental health problems as outlined above. For that reason, the following section provides a brief summary on attempts that have been undertaken to prevent mental health problems in students by using the internet.

A distinction is made between primary, secondary and tertiary prevention. Primary prevention in mental health refers to efforts being made to prevent the occurrence of mental disorders in a population without symptoms or incidence. Interventions aiming to reduce the prevalence in a population affected by symptoms or at higher risk are considered secondary prevention. Tertiary prevention refers to interventions seeking to reduce the effects (e.g. disability) of a disorder (World Health Organization, 2004).

A further distinction is made between universal, selective and indicated prevention. Universal prevention refers to interventions targeting an entire population, regardless of risk status or benefit for each individual. Selective prevention includes intervention aimed at individuals, who have been identified to be at significantly higher risk for the development of a disorder. Indicated interventions are those that target individuals at risk, who show detectable symptoms below the threshold of a diagnostic classification (World Health Organization, 2004).

The reasons for preventing mental disorders in students are manifold. One reason is that many mental disorders have their peak or first onset in early adulthood. In addition, students are exposed to numerous stressors, which can contribute to the onset of mental disorders. The structure of university makes it easier to detect students at risk and target them, especially by making prevention interventions mandatory for some students or within some courses. Within the last two decades, the internet has become increasingly popular in the delivery of prevention programmes.

1.8.1 Why use the internet?

According to the usage and population statistics from www.internetworldstats.com, over two billion people worldwide were using the internet by early 2011. Across Europe, close to 60 per cent of the population use the internet, in the United Kingdom the figure is over 80 per cent. Amongst the most frequent users is the age group of 16 to 24 year olds. In this group, 30 per cent use the internet to seek health related information (Office for National Statistics, 2011).

Given the wide distribution and technological possibilities of the internet, it is not surprising that it is increasingly used for the distribution of health services (Sampson Jr, Kolodinsky, & Greeno, 1997). A number of advantages can be identified for the use computers and the internet for health-related applications. Computerised health applications can be anonymous and hence help overcome stigma or social barriers often associated with mental health problems (Miller & Gergen, 1998). Although health professionals are often sceptical towards self-help materials (e.g. Jorm, Korten, Jacomb, Rodgers, & Pollitt, 1997), patients rank the perceived helpfulness above those of psychological therapies (Jorm et al., 2000). With mental health services often being limited in resources and affected by long waiting lists, online-based intervention can

offer immediate help, particularly for those affected by subclinical problems. Users can work in their own time and access help outside regular hours. In addition, internet-based health applications can over come geographical barriers (Williams, 2001). Compared to written self-help materials, the internet allows for multimedia content, synchronous or asynchronous communication, interactive assessments and feedback (Musiat & Schmidt, 2010).

It has to be noted that there are disadvantages and challenges associated with internet-based health applications. The user requires the hard- and software to access the programme as well as an internet connection of sufficient speed and the skills to operate these systems (Musiat & Schmidt, 2010). With more devices being capable of accessing the internet, this disadvantage should become less of a problem. The Office for National Statistics (2011) reported that by March 2011, 71 per cent of 16 to 24 year olds had mobile internet access (i.e. access on a portable device). Recently, concerns have increased about the protection of personal data on the net. In internet-based health applications, the safety of sensitive data during transmission and storage needs to be assured. However, 84 per cent of 16 to 24 year olds consider their computer and internet skills as sufficient to protect their personal data (Office for National Statistics, 2011).

1.8.2 Prevention of anxiety disorders and depression

Earlier in this chapter we have seen that anxiety and depression are commonly found in students and hence it is not surprising that most prevention programmes in students target these conditions. For that reason, prevention programmes of anxiety, depression or both are presented together in the following section.

Kenardy, McCafferty and Rosa (2003) conducted a randomised controlled trial of an internet-based prevention programme targeting anxiety in university students. Students were screened regarding their anxiety sensitivity levels and offered participation if considered at risk for developing anxiety problems. Eighty-three students either had to complete the six-weeks online intervention or were allocated to a waiting list control group. The authors demonstrated a significant reduction on at least some of the assessed domains, namely negative cognition on consequences of anxiety, beliefs about dangerousness of anxiety symptoms, and depressive symptoms. Contrary to their

hypothesis, however, the programme did not reduce anxiety sensitivity itself and therefore might not have reduced the risk of developing anxiety problems. The authors conducted a six-month follow-up with their sample and reported that the improvements found post intervention remained stable after six months (Kenardy, McCafferty, & Rosa, 2006).

Another study targeted symptoms of depression and anxiety sensitivity as risk factors for the development of anxiety disorders in young people (Schmidt et al., 2007). The intervention in this study was not internet-based, but consisted of a multimedia presentation delivered in a laboratory setting via computer. Immediately after the intervention, participants reported anxiety sensitivity levels 30 per cent below baseline. In addition, participants were followed up after 12 and 24 months and incidences of Axis I disorders were recorded. After 24 months, there were significantly fewer diagnoses of mental disorders in the treated groups compared to the control group (Schmidt et al., 2007).

In a study with 238 undergraduate students, the efficacy of a depression prevention programme was investigated. The intervention was based on the Cognitive-Behavioural Analysis System of Psychotherapy by McCullough (1984) and adapted for prevention. Compared to controls, students in the intervention group had significantly reduced depression and anxiety with up to medium effect sizes (Cukrowicz & Joiner, 2007).

One of the few studies only focusing on the prevention of depression in students was conducted by Gortner, Rude, and Pennebaker (2006). They investigated, whether expressive writing reduces depression in students and delivered their intervention via an internet page. Students were considered eligible for the study if they scored above a certain cut-off on an inventory to diagnose depression–lifetime. Significant effects for the intervention were only observed in students who reported to suppress their emotions.

Braithwaite and Fincham (2007) conducted the first relationship-focused web-based programme for the prevention of depression in students. They hypothesised that students who completed their "ePREP" intervention would show reduced depression and anxiety and that the reduction would be correlated to attrition. Students in the

control group would receive psychoeducational information on depression and anxiety. In accordance with their hypotheses, participants in the treatment group reported lower depression, negative affect and anxiety. However, the amount of material completed was not a moderator of outcome, as initially hypothesised. The results were confirmed in a later study (Braithwaite & Fincham, 2009).

Finally, Seligman, Schulman, and Tryon (2007) combined different modes of delivery in an intervention to prevent mild or moderate depression and anxiety in students. Students were randomised into an intervention group receiving an eight-week workshop with web-based material or a passive control group. As the effects of a similar intervention diminished after three years (Seligman, Schulman, DeRubeis, & Hollon, 1999), the authors added the web component to maintain the effects of the workshops. Although the students reported significantly lower depression and anxiety after the intervention compared to the control group, no significant differences remained at six-months follow-up. However, life satisfaction was significantly improved in the intervention group after the workshops and at follow-up. The lack of an active control group was a major drawback in this trial, as it is possible that the observed changes are due to the amount of time spent with the material and not due to its content.

1.8.3 Prevention of substance use disorders

Due to the fact that many young individuals have their first contact with alcohol in their late teens, most prevention programmes have focused on adolescents. Tobler et al. (2000) conducted a meta-analysis of over 200 drug prevention programmes (including alcohol and tobacco) in schools. They concluded that the most effective programmes were interactive and attempted to minimise harm of drug use.

Walters, Vader, and Harris (2006) reviewed the evidence on drinking prevention programmes for university students. Overall, they concluded that information-based programmes were less effective than programmes addressing skills or attitudes. In addition, personalised information was superior to general information. In a study of an internet prevention programme for binge-drinking in university students, participants either received a series of online newsletters or a print version of the newsletter through the post. The newsletter addressed beliefs on alcohol, risks of binge-drinking, strategies for reducing the risk of binge-drinking and provided internet links to university

resources on alcohol. The authors collected data on drinking behaviour before and after the intervention. In both groups, only the past 30-day frequency of drinking decreased significantly, no difference was found between the two modes of delivery (Moore, Soderquist, & Werch, 2005). Another intervention targeting alcohol use of students is called "My Student Body" and offered university students motivational feedback to help them identify risks and reduce their drinking. In an evaluation of the programme with American students, a response rate of 80 per cent was achieved and significantly reduced the maximum number of drinks consumed during one occasion. Interestingly, the intervention was most effective in female students, students who persistently drink heavily and drinkers with a low motivation for change (Chiauzzi, Green, Lord, Thum, & Goldstein, 2005).

1.8.4 Prevention of eating disorders

Similar to substance use disorders, eating disorders have an onset in adolescence. As a result, many prevention programmes have focused on school children. Stice and Shaw (2004) systematically reviewed the prevention literature in eating disorders and concluded that programmes are most effective if they are interactive, contain multiple sessions and target females older than 15 years and at risk.

However, with many young women developing eating disorders in their university years, it is not surprising that universities have made efforts to prevent eating disorders. One of the first trials in providing eating disorder prevention via the internet was conducted by Winzelberg et al. (2000). In their programme called "Student Bodies", female students wishing to increase their body image satisfaction completed a structured eight-week intervention. The multimedia programme addressed body image, cultural determinants of beauty or the role of media in the development of beauty image through the use of cognitive-behavioural techniques. Users also had to participate in an online forum by asking questions or posting experiences. At follow-up, significant differences on the Body Shape Questionnaire (Cooper, Tayor, Cooper, & Fairburn, 1987) were found in the intervention groups compared to controls (delayed intervention control).

Since this first study, the "Student Bodies" internet programme has been used in numerous other studies (e.g. Celio et al., 2000; Zabinski et al., 2001). One of the most

important findings of subsequent studies was that the programme seemed effective if students were at higher risk for developing eating disorders (Celio et al., 2000). Beintner, Jacobi and Taylor (2011) recently reviewed the evidence from randomised controlled trials of "Student Bodies" and concluded that the programme produces mild to moderate improvements on a number of eating disorder scales. Contrary to other reviews on prevention in eating disorders in general (Stice & Shaw, 2004; Stice, Shaw, & Marti, 2007) the authors did not find targeted prevention to be more effective. However, they noted that "Student Bodies" targets students with low body satisfaction and hence may be self-selective.

The studies presented in this section suggest that some effective prevention or early intervention programmes for common mental disorders in students exist. However, many studies presented here have a number of methodological flaws. First, not all the studies were randomised controlled trials. Second, many studies have small and self-selected samples. This is problematic, as it may overestimate the efficacy of the programme in the general population and provides little information about the efficacy and feasibility of the intervention on a large scale. Third, surprisingly many studies do not make a clear distinction between prevention and intervention. This is mainly due to the fact that the observed effects were small and are often confined to students at relatively high severity. Finally, with the exception of programmes targeting anxiety and depression, all programmes only target one disorder, which is somewhat surprising given the range of disorders and symptoms observed in students and the fact that these disorders have shared risk factors and comorbidity.

This introduction reviewed the literature on student mental health, personality risk factors and internet-based prevention of common mental disorders in students. Three main conclusions can be drawn from the literature. One is that the most commonly found mental disorders in students are depression, anxiety, substance use disorders and eating disorders, although not all students fulfil clinical criteria, and that these disorders have high comorbidity. This suggests that these disorders may share aetiological factors. The second conclusion is that there are a number of personality traits that are associated with the development of these common disorders. The third conclusion is that common mental disorders in students can be prevented and targeted with internet-based

interventions. However, existing interventions have only targeted single disorders and therefore can only improve the mental health of a subgroup of students. This gap in mental health of university students is to be addressed in this thesis with the development of a trait-focused internet-based intervention targeting common mental disorders.

1.9 Thesis outline

Chapter 2 presents the first empirical study in this thesis, which aims to investigate symptoms of common mental disorders in students and personality risk factors associated with these symptoms. In addition, an approach for identifying students at high risk for developing mental disorders is explored. As outlined earlier in this chapter, previous studies have only looked at some personality factors in isolation. This study will look at personality from several perspectives.

In Chapter 3 of this thesis, a mixed methods study is presented investigating students' mental health needs. In this study, quantitative and qualitative methods were used to identify the main challenges that students face at university and how they could be supported with these challenges. As this study followed the study on personality and mental health, it was possible to link the results from this mixed-methods study with those from the first study.

Based on the results from these two studies, Chapter 4 describes the development and content of a trait-focused internet-based intervention targeting common mental disorders in student. This chapter also outlines how personalised computerised feedback in complex health interventions can be designed and how the feedback was realised in the trait-focused intervention.

In Chapter 5, a randomised controlled trial is presented evaluating the efficacy of the trait-focused internet-based intervention. Students were categorised into high and low risk and randomised to either an intervention group or a control group.

The final chapter of this thesis presents a general discussion of the findings drawing on the existing literature.

Chapter 2 - Personality risk factors of common mental disorders in university students

2.1 Chapter scope

This chapter presents a study exploring the occurrence of symptoms of common mental disorders and associated risk factors in students. The beginning of this chapter briefly summarises existing research on student mental health and personality risk factors for common mental disorders, followed by a description of the methodology used. After the presentation and discussion of the results, limitations of this study are discussed as well as the implications for the development of an internet-based trait-focused prevention programme.

2.2 Introduction

The transition from school to university is associated with a rise in mental health problems (Royal College of Psychiatrists, 2011). The reasons for this rise are manifold. A number of psychiatric disorders such as depression, schizophrenia or substance use disorders often first occur in late adolescence (Kessler et al., 1994). Many students move away from home when they start their courses and are suddenly faced with a number of responsibilities, including issues around accommodation and finances.

Over the past decades, research has suggested that mental health problems amongst students are increasing. Current student demographics include higher proportions of international students and students over the age of 25 (Choy, 2002), a factor which may account to some extent for this increase as international students are more likely to be affected by mental health problems (e.g. Sam & Eide, 1991). Advances in pharmacological treatments also allow people with mental health problems to enter university, who otherwise would not have been able to (Gallagher & Taylor-Webmaster, 2005).

Up to 15 per cent of students report moderate or severe levels of depression and about 20 per cent of students report moderate or severe anxiety levels. Amongst female students, up to ten per cent report a current eating disorder (Royal College of Psychiatrists, 2011). Although about 11 per cent of students do not drink at all, of those who do, 61 per cent of males and 48 per cent of females exceed the so-called "sensible levels" (Webb et al., 1996).

In summary, research indicates that students often show symptoms of common mental disorders that, although being below clinical severity, pose a threat to their mental health and wellbeing.

Students' academic performance can be affected by mental health problems in different ways. In a study of 326 psychology students, academic grade was unrelated to psychopathology. However, both, students' motivation and the use of learning strategies were affected by psychopathology, which are variables associated with academic performance (Brackney & Karabenick, 1995). Substance abuse in particular seems to affect academic grades negatively. In contrast, several studies have suggested that students with anxiety problems achieve higher academic grades than students with lower anxiety levels (Svanum & Zody, 2001; Wolfe & Johnson, 1995). Kessler, Foster, Saunders, and Stang (1995) surprisingly found that only 5 per cent of those who drop out from university have a history of psychiatric problems, but also suggested that these figures are rising. Another key observation in student mental health is that the different mental health problems described above commonly occur in conjunction or successively (e.g. Kessler et al., 1994; Khan et al., 2005).

Given the frequent co-occurrence of common mental disorders and related subclinical problems it is likely that their aetiology is also shared, for example through underlying genetic factors and/or common underlying personality factors. A large number of diverse personality factors have been identified that are connected with the psychopathology of common disorders in students, such as depression, anxiety, eating disorders, and alcohol and substance abuse.

Within the five-factor model of personality (Costa & McCrae, 1992), particularly Neuroticism and Extraversion show strong links with mental disorders. High levels of Neuroticism are associated with the development of depression, anxiety disorders (Clark et al., 1994) and eating disorders (Ghaderi & Scott, 2000). Low Extraversion (i.e. Introversion) is associated with higher levels of anxiety (Bull & Strongman, 1971), substance use disorders (Conrod et al., 2000) and eating disorders (Bollen & Wojciechowski, 2004).

Impulsivity can be described as the tendency to act without considering risks or consequences of action. In patients with depression, higher impulsivity scores are related to suicidal behaviour (Corruble, Damy, & Guelfi, 1999). In eating disorders, patients with bulimia nervosa show elevated levels of impulsivity (Fahy & Eisler, 1993). Similarly, high levels of impulsivity are associated with alcohol and substance misuse (Dawe & Loxton, 2004).

Anxiety sensitivity describes the fear of anxiety related symptoms such as palpitations or shortness of breath arising from the belief that they are life-threatening (Reiss, Peterson, Gursky, & McNally, 1986). Patients with anxiety disorders, except simple phobias, show elevated levels of anxiety sensitivity (Taylor et al., 1992). It is supposed that anxiety sensitivity plays a major role in the development of anxiety disorders (Hazen, Walker, & Stein, 1994). A more recent study investigated the connection between eating pathology and anxiety sensitivity and suggested that anxiety sensitivity scores predict scores on the Eating Disorders Inventory 2 (Anestis et al., 2008). Higher levels of anxiety sensitivity, furthermore, not only predict higher drinking levels (Stewart et al., 1995), but are associated with clinically significant problem drinking symptoms (Conrod et al., 1998).

Although perfectionism may be best considered as a multidimensional construct, it can be generally characterised as the tendency to set excessively high personal standards of performance (Frost et al., 1990). Having high standards can be a protective factor. In college students, adaptive perfectionism is associated with more positive and less negative affect, less anxiety, and higher self-esteem (Rice, Vergara, & Aldea, 2006). In contrast, maladaptive perfectionism is related to depressive symptoms (Hewitt & Flett, 1990). Aspects of perfectionism, such as Concerns over Mistakes are associated with social anxiety (Antony et al., 1998). Perfectionism, particularly Concern over Mistakes is a salient trait in patients with acute anorexia nervosa or bulimia nervosa (Bulik et al., 2003) and considered to be a risk factor, especially for anorexia nervosa (Fairburn, Cooper, Doll, & Welch, 1999).

Sensation seeking describes the tendency to seek novel and complex experiences, despite potentially associated physical and social risks (Zuckerman, 1979). It has four dimensions: thrill and adventure seeking, experience seeking, disinhibition and boredom

susceptibility (Zuckerman, 1994). In patients with eating disorders, who exhibit binge/purging behaviours, higher levels of sensation seeking can be found in comparison with healthy controls or patients with restrictive anorexia (Rossier, Bolognini, Plancherel, & Halfon, 2000; Steiger, Jabalpurwala, Champagne, & Stotland, 1997). A large number of studies have found a connection between sensation seeking and alcohol abuse, with the strongest effect for disinhibition (Hittner & Swickert, 2006). Drug abuse has also been related to higher levels of sensation seeking (Zuckerman, 1994).

The concept of learned helplessness was first described by Seligman and refers to an individual's belief that its actions are irrelevant for the outcome of a situation (Seligman, 1975). It is assumed that learned helplessness plays an important role in the development of depression. Depression is supposed to be the result of experiences of helplessness and an attribution of such events to internal stable and global factors (Abramson, Seligman, & Teasdale, 1978). Research on substance abusers suggests that helplessness is also a risk factor in the development of addictions (Conrod et al., 2000).

In summary, a number of personality risk factors exist that have been associated with the development of multiple common mental health problems in students. Previous studies on mental health and personality, however, have mostly looked at specific traits and their association with psychopathology in isolation.

2.3 Aims

The aim of this study was to investigate the relationship between personality variables and symptoms of mental disorders in students. By assessing students on a number of psychological and behavioural variables, it was possible to identify clusters of symptomatology. These clusters were compared on a number of personality variables to identify personality risk factors associated with the development of mental health problems. Personality measures were chosen that measure the factors identified in the literature as likely shared personality risk factors. In addition, the secondary aim of this study was to identify personality factors that allow for the identification of students at high risk for developing mental health disorders and that can be targeted in an internet-based intervention.

2.4 Method

2.4.1 Design

A student website was set up containing all study questionnaires. Students were invited via email to log on to the website, create a profile and complete the questionnaires. The website included information about the purpose of the study and the involved researchers.

Before access to the questionnaires was granted, students had to read the consent form and indicate their agreement with a check box. Ethics approval for the study was granted by the King's College London, Psychiatry, Nursing & Midwifery Research Ethics Subcommittee (PNM/08/09-142, see Appendix A).

The study was advertised as research about personality and living of university students (PLUS), investigating the relationship between personality risk factors, and psychological and physical wellbeing and to what extent these factors change during the first two years at university. Students were offered to find out more about their strengths and weaknesses in the study. A copy of the recruitment email can be found in Appendix B. As this recruitment strategy is prone to attracting students with a general interest in research or an interest in personality, risk of mental health problems and psychological wellbeing, participating students automatically entered a raffle for online retail gift vouchers (Amazon, iTunes) with a face value of up to £50. The chances of winning a voucher were approximately 10 per cent. The aim of offering students a financial incentive for participating was to recruit a broader range of students.

Students were recruited from King's College London (KCL) and University College London (UCL). The recruitment email was sent out to undergraduate students. Approximately 12,000 students received the recruitment email at KCL and approximately 12,000 at UCL.

2.4.2 Standardised measures

The study included two groups of standardised measures. The first group included personality measures, and the second group included measures of psychological health.

Personality measures

This group of measures contained questionnaires on specific aspects of personality and aspects that have been related to the development of mental health problems in the literature.

NEO Five-Factor Personality Inventory

The NEO Five-Factor Personality Inventory (NEO-FFI; Costa & McCrae, 1992) is the shorter 60-item version of the revised NEO Personality Inventory (Costa, McCrae, & Dye, 1991). Based on the five-factor model of personality (Costa & McCrae, 1985), it is a self-report measure that assesses the personality domains: Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness. Each domain is represented by 12 statements and participants have to indicate their agreement to each statement on a rating scale ranging from "strongly disagree" to "strongly agree". Several studies investigated the psychometric properties of the NEO PI-R as well as the NEO FFI. The authors have reported internal consistencies with Cronbach's α ranging from .86 to .92 and test-retest reliabilities for the NEO FFI were found to be .79 to .83 (Costa & McCrae, 1992).

A study investigating the relationship between the five factors of personality and wellbeing suggested that affect balance was positively correlated with Extraversion, Agreeableness and Conscientiousness; and negatively correlated with Neuroticism (Costa et al., 1991).

The NEO FFI is distributed by Psychological Assessment Resources. For the administration of this questionnaire, a license agreement was obtained covering the online administration for up to 600 individuals.

Frost Multidimensional Perfectionism Scale

The Frost Multidimensional Perfectionism Scale (FMPS) is a self-report measure assessing perfectionism on six dimensions (Frost et al., 1990). These are: Concerns over Mistakes, Personal Standards, Parental Expectations, Parental Criticism, Doubts about Actions, and Organization. The Concern over Mistakes subscale indicates to what extent the individual experiences negative reactions to mistakes or has a tendency to interpret mistakes as failure. Personal Standards describe the setting of very high

standards and placing excessive importance on these standards for self-evaluation. The Parental Expectations subscale conceptualizes the belief that one's parents have very high standards and Parental Criticism refers to the perception of them being overly critical. Doubts about Actions describes the tendency to believe that a task has not been satisfactorily completed. An importance of and preference for order is conceptualised in the Organization subscale. The questionnaire has 35 items to which participants have to respond on a five-point rating scale ranging from "strongly disagree" to "strongly agree". The original authors of this questionnaire demonstrated a good reliability of the FMPS. Internal consistencies (Cronbach's α) for the subscales ranged from .77 to .93 and an overall internal consistency of .90 was reported. The subscales of the FMPS were demonstrated to have moderate to high correlations with the Burns Perfectionism Scale (Burns, 1980) and the perfectionism subscale of the Eating Disorder Inventory (Garner et al., 1983). However, the factor structure of the FMPS has been subject to criticism. Particularly the Parental Expectations and Parental Criticism subscale seem to load on the same factor, and Organisation often loads on other factors (e.g. Stöber, 1998). For that reason, only items for the subscales Concern over Mistakes, Personal Standards and Doubts about Action were included in this study.

Substance Use Risk Profile Scale

The Substance Use Risk Profile Scale (SURPS) is a self-report measure assessing four personality profiles for the use of alcohol and drugs (Woicik, Conrod, Phil, Stewart, & Dongier, 1999). Motivational profiles include Anxiety Sensitivity (AS), Hopelessness (H), Sensation Seeking (SS) and Impulsivity (I). Anxiety Sensitivity describes how the participant deals with unusual body sensations such as changes in heart rate and the subscale includes five items. The Hopelessness scale consists of seven items assessing to what extent the individual feels happy, content and looks positively into the future. Sensation Seeking refers to the tendency to try out different and possibly dangerous experiences. This motivational profile is assessed with six items. The Impulsivity subscale contains five items and assesses to what extent the individual thinks before saying or doing things or acts on instinct. Participants have to indicate their level of agreement with each item on a four-point rating scale ranging from "strongly disagree" (1) to "strongly agree" (4). In a study with 462 undergraduates by Woicik et al. (2009), internal consistencies for each subscale were obtained ranging from .61 (AS), .64 (I), .70

(SS) to .86 (H). Test-retest reliabilities for the subscales were reported as .51 (AS), .75 (H), .80 (SS) and .61 (I). In terms of the validity of the measure, it was shown that the subscales Introversion/Hopelessness, Sensation Seeking and Impulsivity were significantly correlated with the frequency of drinking, whereas the Anxiety Sensitivity subscale was correlated with the severity of alcohol related problems (Woicik et al., 2009).

Psychological and behavioural measures

The psychological and behavioural measures included measures for the detection of mental health problems such as depression, general anxiety and eating disorders. Furthermore, measures assessing the use of alcohol and substances and the consequences of such use were included. Finally, this group of measures included a questionnaire on general quality of life. The measures were selected in consultation with an expert panel with the aim of identifying short and validated measures.

Patient Health Questionnaire

The Patient Health Questionnaire 9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) is a self-report questionnaire to both diagnose depression and to assess the severity of depression symptoms. It consists of nine items from the "Prime-MD" Patient Health Questionnaire (Spitzer et al., 1999) and participants have to indicate how often they have experienced each symptom within the last two weeks on a four-step rating scale ranging from "not at all" (0) to "nearly every day" (3). The PHQ-9 provides cut-off scores for the level of depression ranging from minimal (0-4), mild (5-9), moderate (10-14), moderately severe (15-19) and severe (20-27). An internal consistency of .89 was reported as was a test-retest reliability of .84 (Kroenke et al., 2001).

To validate the PHQ-9, the authors compared the scores to a diagnosis from a blinded mental health professional and functioning levels as assessed with the Medical Outcomes Study Short-Form General Health Survey (SF-20, Stewart, Hays, & Ware Jr, 1988). Patients with major depression were most likely to have scores above 15, whereas healthy patients were most likely to have scores below 10. Higher PHQ-9 scores were associated with worse functioning and a higher number of physician visits (Kroenke et al., 2001).

Generalised Anxiety Disorder Scale

The Generalised Anxiety Disorder scale (GAD-7) is a brief self-report questionnaire to assess symptoms of Generalised Anxiety Disorder (Spitzer et al., 2006). It consists of seven items and participants have to indicate how often they have experienced symptoms within the past two weeks on a four-step rating scale ranging from "not at all" (0) to "nearly every day" (3). Cut-off scores for minimal (0-4), mild (5-9), moderate (10-14) and severe (15-21) general anxiety are provided. The GAD-7 has demonstrated excellent internal consistency (Cronbach's α=.92) and a test-retest reliability of .83 (Spitzer et al., 2006).

Increased scores on the GAD-7 are associated with functional impairment and disability days on the Medical Outcomes Study Short-Form General Health Survey (SF-20; Stewart et al., 1988). The GAD-7 was validated with a general population in Germany. This study confirmed the one-factor structure of the measure and the high internal consistency. Furthermore, higher general anxiety scores were associated with reduced scores on the Rosenberg Self-Esteem Scale (Löwe et al., 2008).

Rutgers Alcohol Problem Index.

The Rutgers Alcohol Problem Index (White & Labouvie, 1989) is a self-report screening measure to assess problem drinking in adolescents and young adults. The measure includes 21 items that describe different consequences of alcohol use, such as passing out or experiencing withdrawal symptoms. Participants have to indicate for each item how often they have experienced the described consequence within the last three years on a scale from five-step rating scale ranging from zero ("never") to four ("more than 10 times"). An excellent internal consistency of .92 has been reported by the original authors (White & Labouvie, 1989) and the test-retest reliability ranges from .89 (six months) to .92 (one year, Miller et al., 2002). In terms the validity of the RAPI, scores are correlated with the frequency of alcohol intoxication (.57) and the maximum daily alcohol intake (.69) (Carey & Correia, 1997).

Drinking Motives Questionnaire Revised

The Drinking Motives Questionnaire Revised (DMQR; Cooper, 1994) is a self-report measure to assess the motivation for drinking alcohol and is the revised version of the Drinking Motives Questionnaire (Cooper, Russell, Skinner, & Windle, 1992). Based

on the motivational model for alcohol use by Cox and Klinger (Cox & Klinger, 1988), it assesses drinking motives on the four domains coping, social, enhancement and conformity. Each domain is represented by five items and participants have to indicate how frequently their own drinking is motivated by each of the reasons listed on a five-step rating scale ranging from one ("almost never/never") to five ("almost always/always"). In the original study, the DMQ-R demonstrated a good reliability with internal consistencies (Cronbach's α) ranging from .84 to .88. Similar internal consistencies (.82 to .88) were found in a study with a Swiss general population (Kuntsche, Knibbe, Gmel, & Engels, 2006).

Cooper (1994) investigated the validity of the DMQ-R motives and demonstrated that coping, enhancement and social drinking motives were positively correlated with frequency and quantity of alcohol consumption, whereas conformity motives were negatively correlated. Another validation study confirmed the factor structure of the DMQ-R and identified similar correlation between drinking motives and the frequency and quantity of alcohol use (Kuntsche et al., 2006).

Three Factor Eating Questionnaire Revised 18

The Three Factor Eating Questionnaire R18 (TFEQ-R18; Karlsson, Persson, Sjöström, & Sullivan, 2000) is the revised and shorter version of the original Three Factor Eating Questionnaire (Stunkard & Messick, 1985). It is a self-report questionnaire to measure three dimensions of human eating behaviour (uncontrolled eating, emotional eating, cognitive restraint). Participants have to indicate their agreement to 18 items on a four-step rating scale. The TFEQ-R18 demonstrates high reliability. The original authors reported internal consistencies (Cronbach's α) of .77 to .84 and therefore below the suggested level for individual diagnostics (.90), but suitable for screening purposes (Bracken, 1987). Similar results (.78 to .84) were found in a study with a general French population of teenagers and adults (de Lauzon et al., 2004). In terms of its validity, a study with adolescent girls from Finland found small but significant positive correlations between BMI and cognitive restraint and BMI and uncontrolled eating (Anglé et al., 2009).

Eating Motives Questionnaire

The Eating Motives Questionnaire (EMQ) is a self-report measure assessing people's motivation to eat. It is based on the original Drinking Motives Questionnaire (Cooper et al., 1992) and was developed as an in-house measure at the University of Wisconsin ("Eating Motives Questionnaire"). The scale consists of 15 items each representing a possible reason for people to eat. Participants have to indicate how often their own eating is motivated by each reason on a four-step scale ranging from one ("Never/Almost Never") to four ("Almost always/Always"). Eating motives are assessed on the three domains coping, social and enhancement and each domain is represented with five items. No study has yet investigated the psychometric properties of this questionnaire.

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (RSES) is a self-report questionnaire that assesses self-esteem (Rosenberg, 1965). It includes 10 items and participants have to indicate their agreement to each item on a four-step rating scale ranging from "Strongly agree" to "Strongly disagree". In a study with 53 countries, the mean internal consistency of the RSES was .81. In a study with university students, a test-retest reliability of .84 was observed after a period of four weeks (Martín-Albo, Núñez, Navarro, & Grijalvo, 2007).

In the previous chapter, self-esteem was described as a lower order personality factor that has a stable component as well as is influenced by situational factors. Johnson (1998) suggested that the RSES assesses more global self-esteem, which "is more likely to fluctuate due to everyday experiences and may not be as stable as self-esteem which is conceptualised as more basic and relatively independent of external events" (p. 105). For that reason, self-esteem as assessed with the RSES was considered an indicator of psychological health rather than a personality trait in this study.

World Health Organisation Quality Of Life-BREF

The WHOQOL-BREF (The WHOQOL Group, 1998b) is a short version of the quality of life questionnaire WHOQOL-100 from the World Health Organisation (The WHOQOL Group, 1998b). This self-report measure assesses quality of life on four different domains: physical health, psychological health, social relationships, and

environment. It contains 26 items and participants have to respond on five-step rating scales of several different format.

In the original validations study, good internal consistencies for the domains were reported with Cronbach's α ranging from .66 (social relationships) to .84 (psychological health). The internal consistency of the social relationships domain has to be interpreted with caution, as the scale only consists of three items. The test-retest reliability in the same study was reported to range from .66 for physical health to 0.87 for environment (The WHOQOL Group, 1998b). An international study with 23 countries reported similar internal consistencies at an acceptable level of greater than .70 (Skevington, Lotfy, & O'Connell, 2004). To examine the discriminant validity of the WHOQOL-BREF, scores from well subjects were compared to scores of those with illness (physical or mental). In a majority of countries, scores differed significantly between the groups on all domains, but in particular on the psychological health domain.

2.4.3 Non-standardised measures

Questions on challenges and problems

To collect additional data for the qualitative study (see Chapter 3), a questionnaire was included asking participants about what they experienced as most challenging when they started their course at university, and what was challenging for them at the moment. Furthermore, they were asked to described what troubled them at the moment and, if applicable, how much this had affected them over the last week as well as when they experienced this for the first time. Participants could describe up to two problems. The questionnaire is loosely based on the PSYCHLOPS, a mental health outcome measure used in therapy (Ashworth et al., 2004).

Questionnaire on alcohol and drug use

To assess the frequency and quantity of drug and alcohol use, a brief questionnaire was developed with items from the "European School Survey Project on Alcohol and Other Drugs" (ESPAD; Hibell et al., 2004). The questionnaire included 17 items from the original ESPAD package, assessing the use of cigarettes, different types of alcohol and different types of drugs (e.g. cannabis, amphetamines, cocaine, magic mushrooms).

Participants have to indicate how many times they have been using the substance and at what age they started using it. Appendix C presents the items for this questionnaire.

IAPT Phobia Scales

The phobia scales from the IAPT toolkit (Improving Access to Psychological Therapies) consists of three items that refer to different situations people can avoid (Department of Health, 2008). Participants have to indicate to what extent they avoid each type of situations on a nine-step rating scale ranging from "Would not avoid" (0) to "Always avoid it" (8). Each items refers to a different type of situation and therefore no psychometric properties can be obtained for this measure.

2.4.4 Data analysis

Study data were analysed in two steps. In a first step a cluster analysis was performed to identify clusters of students that show similar symptoms of mental health problems. For this analysis, all psychological and behavioural measures were included in the analysis. In a second step, the resulting clusters from step one were compared on their personality variables to identify personality risk factors that are associated with mental health problems in students. All analyses were carried out using the SPSS 16 software package.

Data imputation

Participants were asked to complete all items when filling out the questionnaires. However, in compliance with college ethics, students had the option not to respond to certain items if they did not want to. Due to the large number of items in some questionnaires (e.g. NEO-FFI), students may also have skipped a few items without noticing. To keep missing data due to missing responses at a minimum, items responses were imputed if the questionnaire allows it and where appropriate. The imputation involved replacing the missing item value with the mean response of the individual on this scale to allow for the computation of scale means or sums. This was only performed for a maximum of one item per scale with the exception of the NEO-FFI, where up to two missing items per scale were imputed. The total percentage of missing items was very low ranging from 0.12 per cent (RAPI) to 0.44 per cent (NEO-FFI).

2.5 Results

2.5.1 Sample

A total number of 425 students registered on the website and started completing questionnaires. Table 2.1 shows demographics of the students, who registered for the study. The majority of students (80 per cent) were female. Although the recruitment email targeted students in their first three years of university, students up to year six participated. The majority of students were in their first (*n*=227) or second (*n*=126) year. On average most students were single (*n*=386) and lived in either shared accommodation (*n*=173) or student halls (*n*=164). Age and BMI were examined graphically due to the high sensitivity of the Kolmogorov-Smirnov test with large sample sizes (Field, 2009). As expected in this population, age was not normally distributed, as most students were between 18 and 21, with a small proportion being significantly older. BMI was considered to be normally distributed.

Table 2.1: Overall participant demographics

Demographic		
Age	Range	18-48
	Mdn	20
Sex	Female	340 (80.0%)
	Male	85 (20.0%)
BMI	Range	12.9-38.9
	M (*SD*)	21.7 (3.5)
Year of studies	Range	1-6
	Mdn	1
Ethnicity	Asian British	32 (7.5%)
	Asian Other	62 (14.6%)
	Black British	3 (0.7%)
	Black Other	3 (0.7%)
	Other	29 (6.8%)
	White British	192 (45.2%)
	White Other	104 (25.5%)
Marital status	Living together	32 (7.5%)
	Married	6 (1.4%)
	Separated	1 (0.2%)
	Single	386 (90.8%)
Housing situation	Living alone	37 (8.7%)
	Shared accommodation	173 (40.7%)
	Student halls	164 (38.6%)
	With Parents	51 (12.0%)

2.5.2 Completer rate

For the first step of the analysis, only participants who completed all psychological and behavioural measures can be included in the analysis. Of all registered students, only 239 (56%) students completed all questionnaires required for this analysis. In what follows, students included in the cluster analysis are called completers. To compare completers and non-completers, a variety of tests were run. To investigate difference and year of studies, the Wilcoxon rank-sum test was used. BMI differences were investigated using an independent samples t-test. Differences on sex, marital status, university, housing situation and ethnicity were investigated with chi-square (χ^2). To ensure sufficient cell numbers for the χ^2 test, ethnicities "Black British", "Black Other" and "Other" were merged into "Other", "Asian British" and "Asian Other" were merged into "Asian" and "White British" and "White Other" were merged into "White". In marital status, categories "Separated" and "Single" were merged together. Results are presented in Table 2.2.

Table 2.2: Differences in demographics between completers and non-completers

	Non-completers *n*=186	Completers *n*=239	
Age	*Mdn*=20	*Mdn*=19	*z*=-1.051 *p*=.293
Year of Studies	*Mdn*=1	*Mdn*=1	*z*=-.162 *p*=.871
BMI	*M*=21.94 *SD*=3.63	*M*=21.50 *SD*=3.43	*t*(415)=1.257 *p*=.210
Housing Situation			
Living alone	9.7%	7.9%	χ^2=1.296(3)
Shared accomm.	40.3%	41.0%	*p*=.730
Student halls	36.6%	40.2%	
With parents	13.4%	10.9%	
Ethnicity			
Asian	29.0%	16.7%	χ^2=9.722 (2)
White	62.4%	75.3%	*p*<.05
Other	8.6%	7.9%	
Marital Status			
Living together	6.5%	8.4%	χ^2=2.439 (2)
Married	.5%	2.1%	*p*=.295
Single	93.0%	89.5%	
Sex			
Female	77.4%	82.0%	χ^2=1.377 (1)
Male	22.6%	18.0%	*p*=.241

Significant differences were only found for ethnicity. Students with an Asian or Other ethnic minority background were less likely to have completed all questionnaires.

2.5.3 Step 1 – Cluster analysis

A hierarchical cluster analysis was performed to explore clusters of symptomatology in the student population. In hierarchical cluster analyses, different methods for identifying and merging clusters can be distinguished. To explore symptomatology clusters in this study, the Ward's minimum variance method was used (Ward Jr, 1963). In this method the within-cluster variance is minimised by merging two clusters with the smallest distance in each step. The distance measure in this method is the squared Euclidean distance. Variables with large values (e.g. score of a questionnaire with many items) would contribute more to the distance than variables with smaller values. Hence, variables were transformed into z-scores within the cluster analysis (Norusis, 2011). The maximum number of clusters in the analysis was set to six and the minimum set to two. Figure 2.1 shows the cluster breakdown of the analysis with the number of cases in each cluster.

Each cluster solution was examined graphically and a summary of the findings is outlined below. No statistical approaches of examining the meaningfulness of a particular cluster solution exist. As the cluster analysis maximised the squared Euclidean distance, the clusters are per definition statistically different from each other.

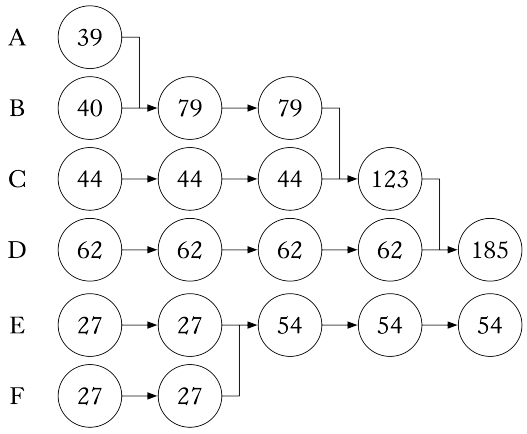

Figure 2.1: Cluster breakdown

Six-cluster solution

The maximum number of clusters for this analysis was set to six and the cluster analysis produced a six-cluster solution with cluster sizes ranging in size from 27 students to 62 students. All clusters were examined regarding their mental health problems. Figure 2.2 shows the levels of depression, general anxiety and self-esteem in the six-cluster solution. It is noteworthy that whereas clusters A to D reported low depression and general anxiety levels, students in clusters E and F reported high levels of clinical significance. Depression levels (PHQ) in cluster E can be classified as minor depression or probable major depression, students in cluster F reported levels suggesting a definite major depression (Spitzer et al., 1999). Generalised anxiety levels (GAD7) suggest the presence of moderate to severe anxiety (Spitzer et al., 2006). Self-esteem varies across clusters, with clusters A, B and D showing the highest self-esteem scores. Students in clusters E and F reported the lowest self-esteem.

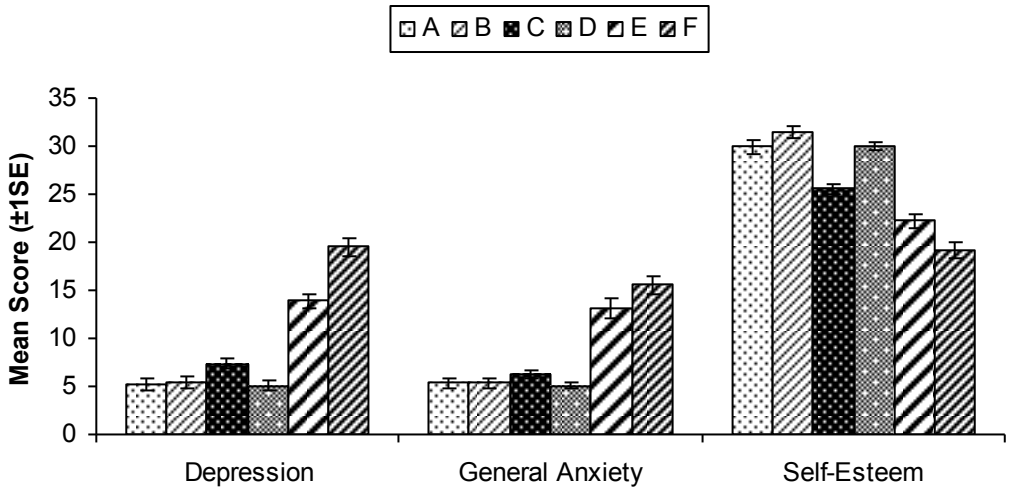

Figure 2.2: Mean depression, general anxiety and self-esteem scores in the six-cluster solution

Figure 2.3 shows the average drinking units for each cluster and RAPI scores. Cluster B and E show the highest drinking levels with up to 16 units per week. Students in cluster D reported very low drinking levels. Although the highest drinking levels were reported in cluster B, RAPI scores in this cluster are do not differ much from RAPI scores in cluster A or C. The highest RAPI scores were reported in cluster E.

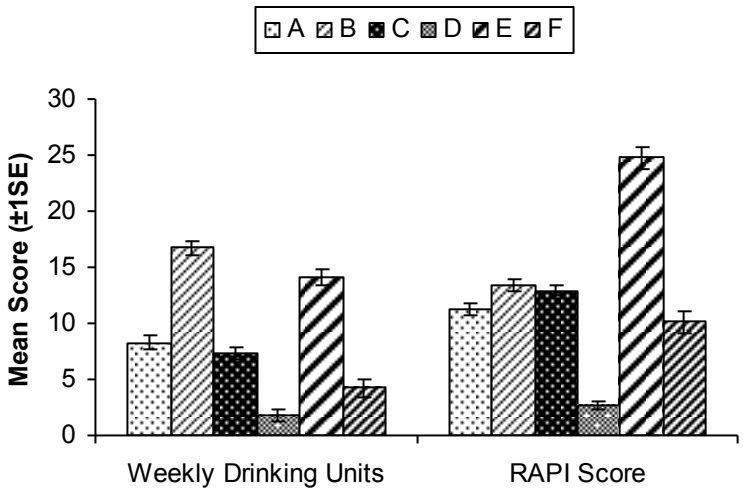

Figure 2.3: Mean drinking levels and RAPI scores in the six-cluster solution

Differences between clusters were also observed on quality of life (WHOQOL). In general, cluster A, B and D report the highest quality of life across the dimensions. Students in cluster and E and F report the lowest quality of life, particularly on the dimensions physical health and psychological health. It is noteworthy that students in cluster C reported the lowest quality of life on the dimension social relationships.

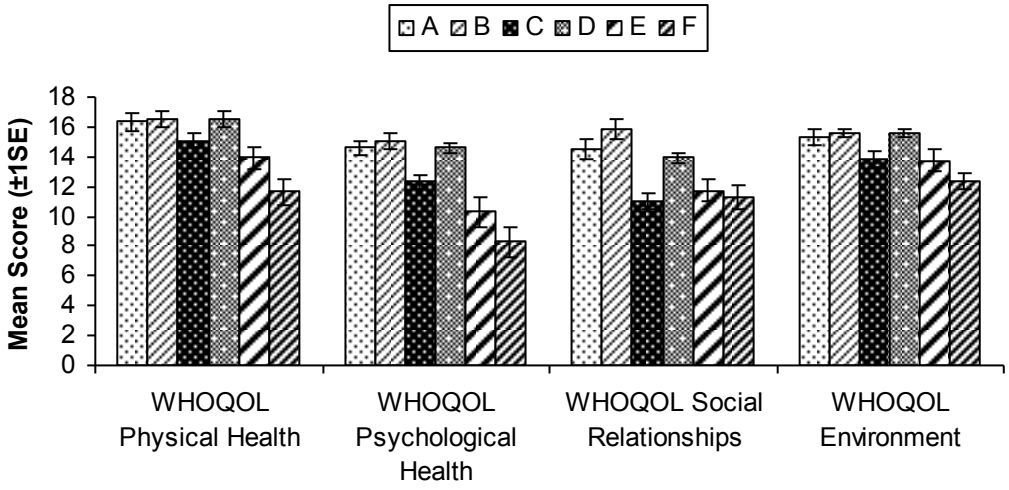

Figure 2.4: Mean quality of life scores across clusters in the six-cluster solution

Two-cluster solution

The six-cluster solution was rejected, as although there were two clusters with students who reported symptoms of mental disorders, the number of students in these two clusters was too small. In addition, whereas the differences with regard to mental health

problems between these two clusters and the remaining clusters were relatively clear, the differences between the two clusters were not. In the following steps, the cluster analysis first merged cluster A and B and then cluster E and F (see Figure 2.1). With cluster E and F merged (*n*=54), each cluster in the resulting four-cluster solution included at least 20 per cent of students. An investigation of the symptomatology in this cluster solution showed, that students in cluster E show symptoms of mental health problems on a variety of scales, whereas students in clusters B, C and D report good mental health. The aim of this study was to investigate symptomatology clusters to inform the development of an internet-based prevention programme for common mental health problems in university students. In the four-cluster solution, in three of the four student clusters students reported no symptoms of mental health problems. Hence the cluster analysis was continued to further reduce the number of clusters. In the next two steps of the analysis, clusters B and C were merged followed by clusters C and D. The result was a two-cluster solution with 185 students (77.4%) and 54 students (22.6%). It is important to note, that the measures used in this study do not allow a diagnosis of particular psychiatric disorders. However, this cluster solution does suggest that students in cluster E (*n*=54) are at higher risk for developing mental health problems. In the following, students in cluster E will be called the "high risk" group whereas students in cluster D are considered at "low risk".

In summary, students at risk report significantly higher levels of depression and general anxiety (see Figure 2.5). Although students in the high risk group did not report drinking more than students at low risk, their RAPI scores were almost twice as high as in the low risk group (see Figure 2.6).

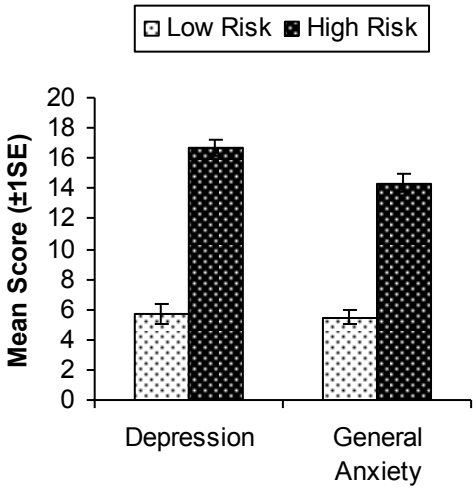

Figure 2.5: Mean depression and generalised anxiety in the two-cluster solution

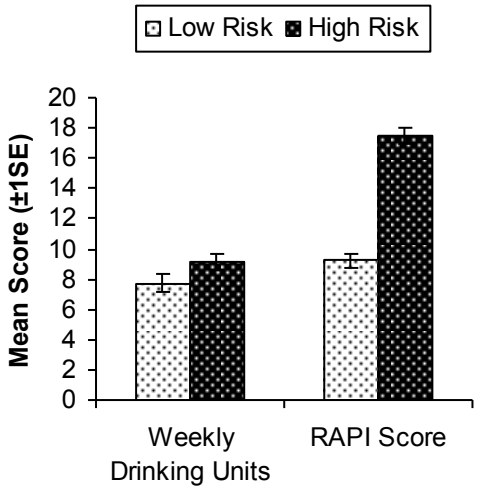

Figure 2.6: Mean drinking levels and RAPI scores in the two-cluster solution

With regard to eating behaviour, differences between the two groups were only observed on the subscales uncontrollable and emotional eating of the TFE. Figure 2.7 shows the eating behaviour as assessed with the TFE for both groups. Students at risk reported more episodes of uncontrolled eating (i.e. eating without feeling hungry, having difficulties to stop eating) and emotional eating (i.e. eating when feeling anxious or low).

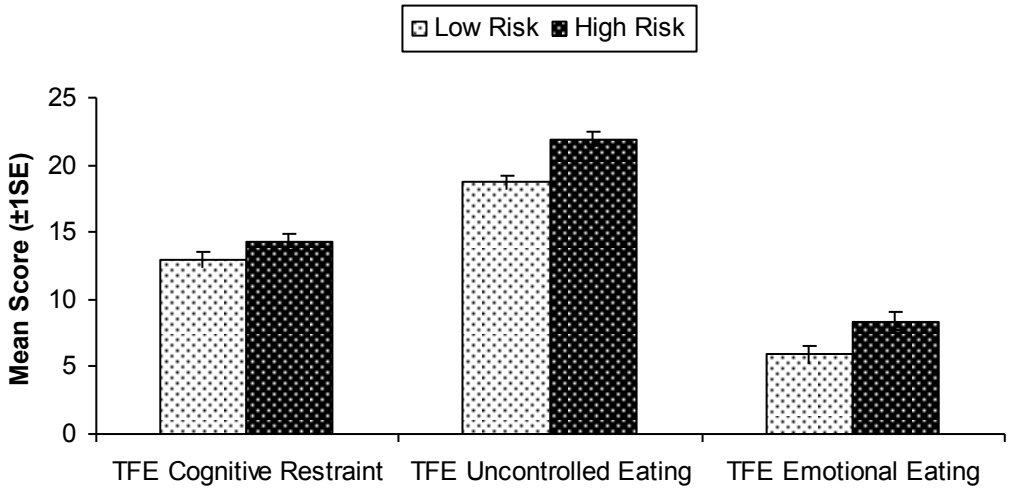

Figure 2.7: Mean scores of eating behaviour in the two-cluster solution

The results on drinking and eating behaviour were supported by the results on the drinking and eating motives. Figure 2.8 shows the drinking motives for both student groups. The biggest differences were observed on the Coping subscale. Students at risk reported higher scores on this subscale suggesting that their motivation for drinking

alcohol arose from the desire to cope with emotions more often than it did in the low risk group. As students in the low risk group reported lower weekly drinking levels, it is not surprising that their drinking motives scores were generally lower compared to students at risk. Figure 2.9 shows the eating motives for both groups. Similarly to the drinking motives and in accordance with the results from the TFE, students at risk show higher levels of coping-related eating motives. This might account for the higher frequency of emotional eating episodes.

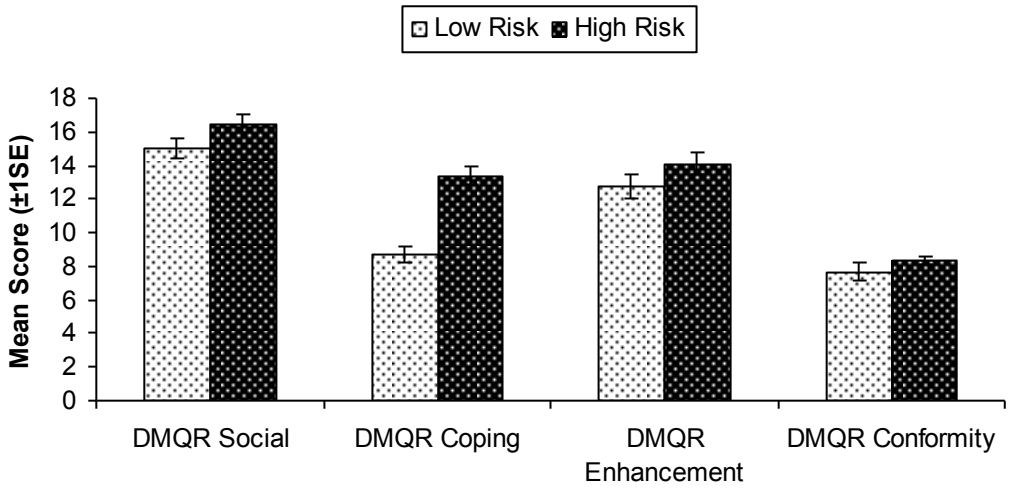

Figure 2.8: Mean drinking motives scores in the two-cluster solution

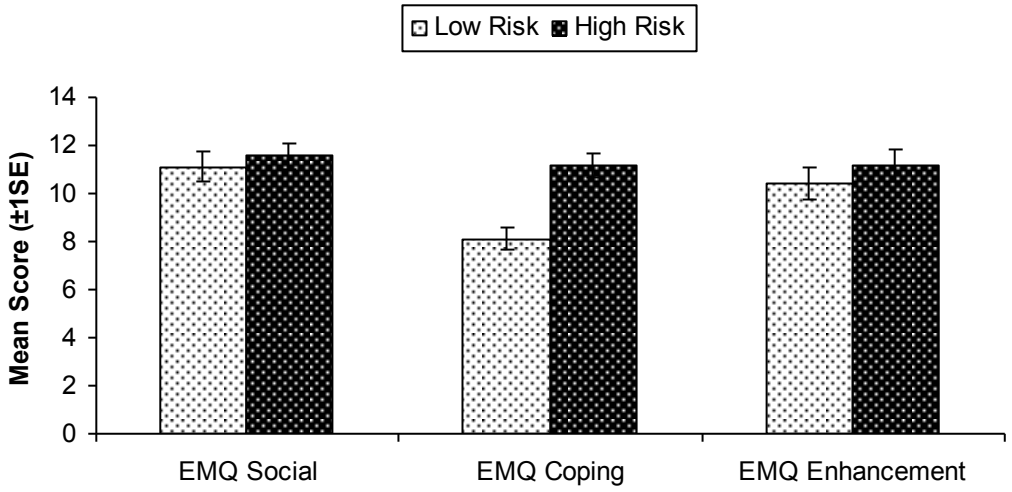

Figure 2.9: Mean eating motives scores in the two-cluster solution

Self-esteem was significantly lower in students at risk. Figure 2.10 shows the Self-Esteem scores from the RSES for both groups. Students in the low risk group reported self-esteem levels that are comparable to the mean score of a student population from another study (*M*=30.55, *SD*=4.95), whereas the mean score of students at risk was approximately two standard deviations below this.

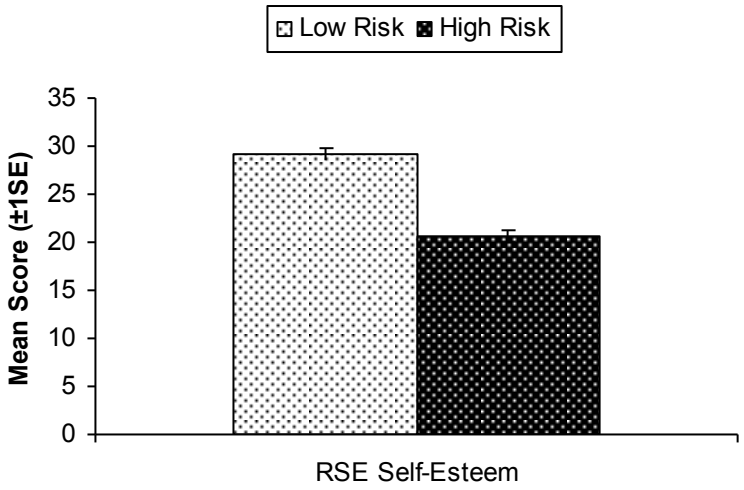

Figure 2.10: Mean self-esteem scores in the two-cluster solution

Quality of life was assessed in this study with the WHOQOL, a quality of life measure from the World Health Organization. Figure 2.11 shows the quality of life for both student groups. Students at risk show lower quality of life on all domains, most prominently on the domains Physical Health and Psychological Health. This indicates that students at risk consider their everyday life as more affected by medical problems than students in the low risk group. Students at risk described themselves as less happy and satisfied with themselves than students in the other group. They also reported lower satisfaction with their relationships, friends and sex life. Lower scores on the Environment subscale of students in the high risk group indicate that they are less satisfied with their general environment in terms of safety, finances, healthiness or transport.

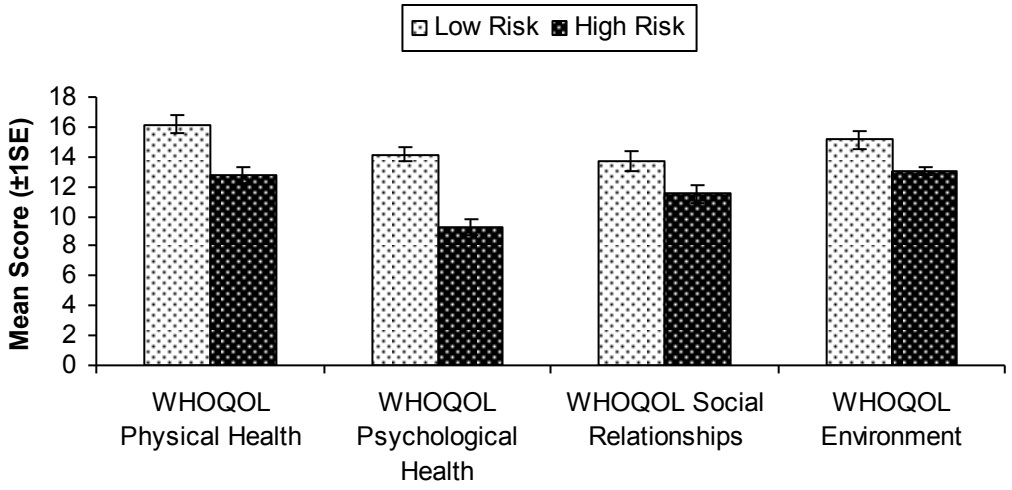

Figure 2.11: Quality of life in the two-cluster solution

Summary

The cluster analysis grouped students according to their mental health symptomatology. The aim of this analysis was to explore whether students can be grouped into different groups with different mental health symptomatology in order to develop an internet-based prevention programme tailored to each group. Starting with a six-cluster solution the number of clusters was eventually reduced to two. The reasons for this lay in the fact that two clusters containing students with symptoms of mental health problems were merged into one group early in the process of the cluster analysis. As the aim of this study was to identify subgroups within students with mental health problems, the cluster reduction was continued until students without symptoms could be grouped into one cluster.

2.5.4 Step 2 – Cluster Comparison

The second step of the analysis included comparing the resulting clusters (high risk and low risk) on all personality variables, in order to identify personality risk factors. For the comparison of the two groups resulting from the final cluster solution, normality of the data was examined graphically and with the Kolmogorov-Smirnov test. The Kolmogorov-Smirnov test revealed that data are not normally distributed for most personality variables. Although the *t*-test is relatively robust against violations of normality, it performs very poorly when the sample sizes of the groups are unequal (Markowski & Markowski, 1990). In this case, the low risk group contained more than

three times the number of students than the high risk group. Hence, the groups were compared using the nonparametric Mann-Whitney test. To account for multiple comparisons on a total of 12 scales, a Bonferroni correction was applied reducing the significance level to .0042. Table 2.3 shows the medians for both student groups on personality domains and the results of the Mann-Whitney test as well as the effect size estimate *r*.

On the Frost Multidimensional Perfectionism Scale, students at risk scored significantly higher on two of three subscales. The higher scores on Concern over Mistakes indicated that they found making mistakes or failing at a task more difficult than students at low risk. Students at risk also reported higher levels of Doubts about Actions, which indicated that compared to students at low risk, they worried more often about whether they have done something wrong. In terms of their Personal Standards, students in the high risk reported higher scores than students at low risk. With the Bonferroni correction applied, this difference was not significant.

On the NEO five-factor personality inventory, significant differences between the two groups were observed on all subscales. Students in the high risk group scored higher on neuroticism indicating that they had a higher tendency to experience negative affect such as fear, sadness or anger. Students in the high risk group scored lower on extraversion, suggesting that they described themselves as less sociable, assertive, active or talkative. On the Openness to Experience scale, students at high risk reported significantly higher scores. Hence, compared to students in the low risk group, they seemed to have a higher active imagination, aesthetic sensitivity, attentiveness to inner feelings or preference for variety. Students at risk also scored lower than students at low risk on the subscales Agreeableness and Conscientiousness. This indicated that they described themselves as less altruistic and sympathetic towards others and less able to control impulses or plan, organise and carry out tasks.

Table 2.3: Median scores on personality domains and Mann-Whitney test for both student groups

	Risk status				
	Low	High	*U*	*p*	*r*
FMPS					
Concern over Mistakes	24	35.5	2064	<.001	-0.42
Personal Standards	24	27	3912	.023	-0.15
Doubts about Actions	11	16	1778.5	<.001	-0.47
NEO					
Neuroticism	25	39	824	<.001	-0.60
Extraversion	29	25	2964.5	<.001	-0.28
Openness to Experience	29	32	3350.5	0.001	-0.22
Agreeableness	31	28	3410.5	0.001	-0.22
Conscientiousness	30	26	3380.5	0.002	-0.21
SURPS					
Sensation Seeking	16	17	4549.5	0.345	-0.06
Impulsivity	11	11	4395	0.193	-0.08
Anxiety Sensitivity	12	14	2819	<.001	-0.31
Introversion/Hopelessness	14	19	1299	<.001	-0.53

No differences between the groups were observed on the Sensation Seeking and Impulsivity subscale of the SURPS. On the Anxiety Sensitivity subscale, students at risk scored significantly higher than students in the other group, indicating that they reacted more sensitively to unusual body sensations such as changes in heart rate. Students in this group also scored higher on the Introversion/Hopelessness subscale of the SURPS. This suggested that they felt less happy and content and looked less positively into their future.

In summary it can be noted that both groups differ on a number of different personality variables. Students at high risk reported higher levels of perfectionism on all domains, higher trait anxiety, high levels of anxiety sensitivity and hopelessness.

2.5.5 Step 3 – Detecting students at high risk

One of the secondary aims of this study was to devise a technique for detecting students at high risk according to their personality. Hence, a binary logistic regression was conducted with risk as the binary outcome and personality variables as predictors. Personality variables with the biggest effect sizes were entered in into the regression.

These were Concern over Mistakes, Doubts about Actions, Neuroticism and Introversion/Hopelessness.

Table 2.4: Result of the binary logistic regression predicting risk

	B (*SE*)	*p*	OR (95% CI)
MPSF Concern over Mistakes	0.03 (0.04)	.403	1.03 (0.96 - 1.10)
MPSF Doubts about Actions	0.10 (0.08)	.226	1.11 (0.94 - 1.30)
NEO Neuroticism	0.18 (0.05)	<.001	1.19 (1.09 - 1.30)
SURPS Introversion/Hopelessness	0.16 (0.08)	.035	1.18 (1.01 - 1.37)
Constant	-11.87 (1.65)	.000	

The resulting logistic regression model was able to correctly classify 86.6 per cent of students at high or low risk. It is interesting to note that two of the predictors, namely Concern over Mistakes and Doubts about Action were not significant predictors in the model. This is not surprising as the personality variables are correlated with each other so that some factors easily lose predictive value in a regression model.

2.6 Discussion

In the cluster analysis, different options for clustering students into different symptomatology groups were investigated. It became apparent early in the process that two student clusters show symptoms of mental health problems, whereas the remaining students did not report any symptoms or reported minimal symptoms. Although I expected to find differences within the group of students experiencing mental health problems, these differences were not observed in the cluster solution. Instead, the two clusters were merged in the third step of the cluster analysis resulting in a four-cluster solution. At this stage, the remaining clusters (B, C and D) only included students with no signs of mental health symptoms. Hence, they were merged resulting in a cluster solution with only two clusters: one group with mental health problems and one group without. Although it is not possible with this solution to differentiate between students with different types of mental health problems, the solution is in accordance with other student mental health research, which suggests that up to 20 per cent of students suffer from mental health problems of some kind (Royal College of Psychiatrists, 2011).

On almost all psychological and behavioural scales, students considered at risk for developing mental health problems reported higher scores than students in the low risk

group. Only on one questionnaire, the TFE, were the differences less obvious. Considering that eating disorders have a relatively low prevalence, this finding is not surprising, as it is possible that within the group of students with mental health symptomatology, only few are affected by eating problems.

A comparison of the two clusters on personality variables revealed that although using non-parametric test with potentially lower statistical power, significant differences were observed on almost all subscales of all personality measures. To investigate the magnitude of these differences, effect size measure *r* was computed for each subscale. On the FMPS, the largest effect sizes were observed for Concern over Mistakes and Doubts about Action, suggesting that these two factors play a more important role than Personal Standards. On the subscales of the NEO, the largest effect size was observed for Neuroticism.

It is interesting to note that although students in the high risk group described themselves as more perfectionistic on the FMPS, they surprisingly scored lower on the Conscientiousness subscale of the NEO, indicating that they feel less able to organise and carry out tasks. However, this may point to a core problem of their psychopathology: they may set themselves higher standards than others (although not significant in this sample), but have difficulties and concerns about achieving them. This could contribute to negative affect (Neuroticism) and the development of other problems.

The results on drinking and eating behaviour as well as drinking and eating motives suggest that students at risk have difficulties with regulating their emotions and tend to engage in unhelpful behaviours such as emotional drinking and emotional eating. However, it is important to note that students in the high risk cluster reported higher levels of depression. It is possible that this higher frequency of low mood accounts for the higher frequency of emotional eating and drinking.

Results for the cluster comparison on the WHOQOL indicated that the quality of life is significantly lower across all domains for students in the high risk group. This suggests that the reduced mental health in high risk students has implications that go beyond the academic context.

In a final step, a binary logistic regression model was developed aiming to classify students into high or low risk according to their personality. Four personality variables with the highest effect sizes with regard to group differences between students at low and high risk were included in the model. The vast majority of students (86.6 per cent) were classified correctly using only these four variables. In this model, perfectionism variables were not significant predictors. Enns et al. (2005) demonstrated that Concern over Mistakes and Doubts about Action are associated with high levels of Neuroticism. This shared variance may account for the lack of significance for perfectionism predictors in the logistic model. However, given the literature on the role of perfectionism in the development of common mental disorders and the high percentage of correct classifications, the variables were kept in the model, creating a more liberal model, which allows for students with high perfectionism and low Neuroticism to be classified at high risk.

2.6.1 Strengths of the study

One of the strengths of the present study lies in the combination of different personality measures with symptom measures of several disorders. This allowed for a much more detailed view on the personality of students at risk for the development of common mental disorders. Previous research has primarily focused on particular aspects of personality (e.g. Big Five or perfectionism only) in the context of specific disorders. In addition, personality variables could be identified, which allowed for the detection of students at high risk for common mental disorders.

Another strength of this study was the use of a cluster analysis to identify symptom clusters. With the development of an internet-based intervention in mind, this allowed for the study to be more data driven, than driven by hypotheses or diagnoses. The literature review in the previous chapter suggested that students often suffer from symptoms of different mental disorders below the diagnostic threshold according to the DSM-IV or ICD-10. For that reason, a more explorative approach was chosen in the present study to maximise information gain for the intervention development.

2.6.2 Limitations

Although both universities used in recruitment offer a large variety of courses and have a diverse student population, students in this study were primarily female. As mental

health problems are more common in females, this may have affected the results of this study. Therefore, students at risk for developing mental health problems could be overrepresented in this study. The study was advertised as a website on which students could find out more about their strengths and weaknesses and it is possible that the nature of the study primarily attracted females.

The cluster analysis required students to have completed all questionnaires in order to be included in the analysis. Only 239 students completed all necessary questionnaires. It is likely that this sample is not representative of the remaining student population. Differences between completers and non-completers were only found in terms of their ethnicity. However, it is likely that students in the completer group generally had a higher motivation to participate in the study whether due to the prospect of receiving a voucher or due to a higher interest in the feedback and the nature of the study.

A large number of different clustering methods exist in hierarchical cluster analysis. In this study, the Ward's minimum variance method was used. It was chosen as it demonstrates superior performance compared to other methods of clustering (Punj 1983). However, this method is sensitive to outliers and tends to produce clusters with the same number of observations. It is possible that other methods for hierarchical clustering might have produced different results.

It was expected that within students that show symptoms of mental health problems, subgroups could be identified, helping to inform the development of a trait-focused internet-based prevention programme. In this study, however, such subgroups were not found. Different factors could have contributed to this result. Regardless of which cluster solution was considered, the overall percentage of students with early signs of mental health problems was around 20 per cent, which is in line with current research. Considering the completer rate of only 56 per cent, the results of this study are mainly based on the responses of a relatively small number of students. It is possible that with a higher total number of participants, different clusters would have emerged. Another consideration that has to be taken into account is that most students at risk do not fulfil the criteria for a psychiatric diagnosis and only some of the students at risk will go on to develop a psychiatric disorder in the future. Hence, most of the observed symptomatology is at a lower level than one would expect in a clinical population. The

measures used in this study also mainly consisted of symptom measures that do not allow for a diagnosis, but rather assess symptomatology on a continuous scale. Therefore, it is likely that well differentiated clusters cannot be observed in a sample such as the one assessed here.

2.6.3 Implications for intervention development

Although the findings from this study were not as clear as expected, the findings have very important implications. The recent trend in prevention is to develop strategies for targeting only populations that will benefit most from a programme. In many cases, however, this means moving away from primary into secondary and tertiary prevention. For example, early attempts to modify eating attitudes and prevent the use of unhealthy weight regulation practices in school children (Killen et al., 1993) or college students (Mann et al., 1997) were unsuccessful. More recent prevention programmes for eating disorders (Taylor et al., 2006) demonstrated higher success when they targeted people considered at risk (i.e. females with high weight and shape concerns).

In the present study, it was not possible to identify subgroups within the groups of students that reported early signs of mental health problems. Considering the aim of preventing common mental health problems in university students and therefore needing to target multiple disorders, the challenge becomes identifying underlying factors that are associated with the symptomatology.

The results from this study suggest that a prevention programme for common mental health problems in students should include components that target both: the psychological and behavioural symptoms as well as the associated personality risk factors. When it comes to psychological and behavioural symptoms, the intervention should deal with the high levels of depression and anxiety, ways of dealing with difficult emotions and low self-esteem. Although significant differences were observed on several personality domains, the effect sizes on the subscales suggest the focus in the intervention should be on the ability to deal with mistakes, having doubts about having done something right or wrong, high trait anxiety (Neuroticism) and feelings of hopelessness.

2.7 Conclusions

About 20 per cent of students report higher levels of depression and anxiety, and low quality of life. Those students can be considered at higher risk for developing common mental disorders. Compared to those at low risk, these students show distinct personality features such as increased perfectionism, higher neuroticism, introversion, impulsivity and hopelessness. Concern over Mistakes, Doubts about Actions, Neuroticism and Introversion/Hopelessness are subscales assessing personality traits that can be used to detect students at high risk.

Chapter 3 - Mental health needs of university students

3.1 Chapter scope

The following chapter presents a mixed methods study exploring the mental health needs of students at university. As part of the web-based study presented in Chapter 2, students were asked to describe what they found most challenging in their life as students and whether anything troubled them at the moment. In addition, three focus groups were conducted asking students about what they found challenging with regard to student living and how they could be supported in coping better with these challenges. After outlining the methodology of this study, the results and limitations are presented and discussed against the background of the results from the previous chapter.

3.2 Introduction

Although the transition from school to university offers young people an increase in opportunities and new experiences, for many students it is a demanding and challenging period associated with an increase in psychological distress. Particularly students suffering from homesickness experience higher levels of depression and anxiety (Fisher & Hood, 1987). A study investigating the impact of personality factors on this transition suggests that neuroticism is associated with higher levels of perceived stress (Lu, 1994). For many students, managing to build up a social network seems to be an important factor for successfully managing this transition (Kantanis, 2000).

Research on counselling services at universities suggests that in recent years, mental health problems amongst students have become more prevalent and severe (Gallagher, 2007). Currently, it remains unclear whether this reflects a true increase in mental health problems or an increase in help-seeking behaviour.

Little is known about the course and outcome of mental health problems over time during university. A longitudinal study at a public university in the United States found that over a two year period, more than a third of students suffered from a mental health problem, most commonly depression or eating disorders. Depending on the type of disorder, up to 60 per cent of students reporting a mental health problem at initial assessment, were still suffering from the problem two years later (Zivin, Eisenberg, Gollust, & Golberstein, 2009). This suggests that the mental health problems of

students are not of short duration or self-limiting. The study did not assess whether these problems have affected students' performance.

In fact, it is difficult to quantify the impact of mental health problems in student populations on academic performance, including completion rates, exam results and career prospects. A longitudinal study investigated personality, mental health and academic performance in 147 medical students over the whole course of their degree (Kelvin, Lucas, & Ojha, 1965). In this study, no difference in intelligence was found between students who sought help for mental health problems and those who did not. The authors concluded that the intellectual demands of studying do not contribute to the development of mental disorders. In addition, students with mental health problems performed academically just as well. Although this study had a very solid design, the results are confined to medical students and potentially outdated.

3.2.1 Help-seeking behaviour

Many psychiatric problems have their onset in adolescence or early adulthood (American Psychiatric Association, 2000). Unfortunately, adolescents and young adults are less likely than older people to seek help for mental health problems. In a survey with a large stratified random sample from Somerset in the United Kingdom, of those with higher scores on the General Health Questionnaire, adolescents and young adults between 16 and 24 were least likely to consult their General Practitioner for their problem. Instead they would rather talk to a friend or relative (Oliver, Pearson, Coe, & Gunnell, 2005). Generally, females are more likely to seek help than males (Rickwood, Deane, Wilson, & Ciarrochi, 2005).

In university students, the reluctance to seek help for psychiatric problems seems even more prominent than in other young people. In a study of American university students, 84 per cent of students who reported anxiety or depression received neither pharmacological or psychological treatment (Eisenberg, Golberstein, & Gollust, 2007). Compared to non-university peers of similar age, students with substance abuse and alcohol problems were less likely to be treated for these problems (Blanco et al., 2008) suggesting that university students experience more barriers to seeking help than non-students.

The reasons for the unwillingness to seek help are manifold, with stigma perhaps being the most important barrier to help-seeking for mental health problems. A distinction can be made between personal stigma, public stigma and self stigma. Whereas personal stigma reflects the views and stereotypes of an individual about mental health problems, public stigma reflects the assumed beliefs of others. Self stigma is the application of those stereotypes to oneself, for example when affected by a mental health problem. A survey of 5,555 university students in the United States suggested that personal stigma is different amongst different groups of students. In particular male students, younger students and international students show higher levels of personal stigma. Although students in this study reported higher perceived public stigma (i.e. their perception of what the majority of people think about mental health problems) than personal stigma, only personal stigma was associated with help seeking behaviour (Eisenberg, Downs, Golberstein, & Zivin, 2009). This suggests that particularly the individual views of mental health problems can present barriers in help-seeking behaviour.

In a study of medical students, among the most frequently reported barriers for seeking help, apart from stigma, were lack of time or the fear of career consequences due to health records or breach of confidentiality (Givens & Tjia, 2002). The fear of negative career consequences has also been identified in UK medical students (Chew-Graham, Rogers, & Yassin, 2003).

Other barriers to help seeking-behaviour include the unawareness of available services, disbelief in the helpfulness of services or, depending on the country, the lack of health insurance or misconceptions about the costs of services (Eisenberg et al., 2007). It is for the latter reason, that students from poorer socio-economic background are often less likely to access services.

Little attention, however, has as yet been paid to the subjective experience of students in their first years at university and what they experience as challenging or positive and how they seek support. In a study investigating students' expectations prior to starting university, the most frequently named expectations were "meeting new people", "having fun", "enjoying a more unregimented learning environment", "being mentally stimulated" and "being able to explore more and more interesting subjects". However, in this study 70 per cent of students indicated later that fewer than half of their

expectations were met. Factors that contributed most to these expectations not being met were difficulties with making friends, the heavy workload at university and the complexity or dissatisfaction with the subjects (Kantanis, 2000).

3.3 Aims

The aim of the present chapter was to explore how students experience their life at university. Specifically, the study aimed to address what students find challenging when they start university and what challenges they encounter later on in their studies. Furthermore, this study aimed to find out where students see potential to be supported with their mental health and what kind of support students wish to receive.

3.4 Method

3.4.1 Design

Data for this study were collected in two ways. One part of the data was obtained as part of the online study described in Chapter Two. The other part was obtained in three focus groups conducted with students. The detailed procedure is outlined below.

3.4.2 Web-based study

Students from two major universities in London were invited to participate in an online-based questionnaire study on personality and psychological wellbeing. A detailed description of this study can be found in Chapter 2 of this thesis. In addition to the questionnaires on personality, psychological and behavioural symptoms, students were asked to complete an optional questionnaire on the challenges of studying. This questionnaire contained four open questions, with the first two questions covering perceived challenges and the remaining questions giving students the opportunity to explain whether something troubled them at the time and to what extent. Table 3.1 shows the questions of this questionnaire in detail. No restrictions were given in terms of the length of students' responses.

Table 3.1: Questions from the online questionnaire

Question
1. What do you think are the biggest challenges for students within the first year at uni? 2. What are/were the biggest challenges for you? 3. Is there anything that troubles you at the moment? Please describe: a. How much has it affected you over the last week? b. How long ago were you first concerned about this problem? 4. Is there anything else that troubles you at the moment? Please describe: a. How much has it affected you over the last week? b. How long ago were you first concerned about this problem?

To indicate how much students felt affected by the issues described in questions three and four, a seven-step rating scale ranging from "Not at all affected" (0) to "Severely affected" (6) was provided. In addition, students could indicate how long ago they were first concerned about the problems on a multiple-choice scale with the options: "Less than one month", "Between one and three months", "Over three months but under one year", "One to five years" and "More than five years".

3.4.3 Focus groups

Three focus groups were conducted with students from King's College London. Students were recruited via an email circular addressing students in the first three years of their studies. The focus groups were conducted by the candidate and another doctorate student. After welcoming each student, written consent was obtained and the student was led into the group room. All groups were audio recorded for transcription. Recording of the groups began after the purpose and nature of the study had been explained to all students. Students were asked to provide their age, gender, country of origin, ethnicity, subject of studies, highest level of qualification, marital status and history of mental health problems in writing. Once students had introduced themselves, the discussion began with the first question from the topic guide. The topic guide consisted of three elements: questions on perceived challenges, questions on support and case scenarios. A discussion of the case scenarios (see Appendix D) only took place if the groups were not progressing as planned and students found it difficult to discuss the topics raised. These scenarios included a brief description of a student that experienced symptoms of mental disorders and participants were asked how the student in the example could be supported. Table 3.2 shows the topic guide for the groups in detail.

Ethical approval for this study was granted by the Psychiatry, Nursing & Midwifery Research Ethics Committee of King's College London (PNM/09/10-80, see Appendix A)

Table 3.2: Focus group topic guide

Challenges
1. When you started your course how did your life change? What were the positives and what where the challenges?
2. Where did you/your friends/other students see the biggest challenges?
3. At that time, what helped you/your friends/other students most with making this transition?
Support
4. What about now? What would you/your friends/other students consider as the highs and lows of student life today?
5. What helps you/your friends/other students most with dealing with the challenges of student life?
6. How could students be supported with these challenges?
7. What could help or hinder someone, who needs support, in seeking support?
Case scenarios (optional)
How could one help this person?
What do you think would be most helpful for him/her?
What would be least helpful for him/her?

3.4.4 Data analysis

Recordings of the focus groups were transcribed with the software tool Inqscribe. All student names, other personal information or information that allowed the identification of the participating students were removed.

Participant responses to the web-based questionnaire and focus group transcripts were analysed using thematic analysis as described by Braun and Clarke (2006). For this study, a data driven and inductive approach was chosen. Hence, themes were not drawn from existing frameworks, but developed by investigating the data in a multi-step process. After transcription of focus group data, initial codes were generated using both, data from the online survey as well as the focus groups transcripts. In a next step, the initial codes were collated into themes or categories. After reviewing these themes, a final set of themes was generated, defined and named.

3.5 Results

Results are presented in separate sections. First, a description of the sample participating in the web-based part of the study followed by the presentation of the results on perceived challenges and problems. These results are integrated into the finding from the previous chapter, followed by a presentation of the results from the focus groups.

3.5.1 Web-based survey

Sample

For the internet-based part of this study, the initial sample was identical to the one described in Chapter two of this thesis. It consisted of 425 students from King's College London and University College London. Detailed sample characteristics of all participants are shown in Table 2.1. However, the questions on challenges and problems in the online study were optional and not all students completed the questionnaire. A total of 188 students provided information on perceived challenges and problems and Table 3.3 shows the sample characteristics of this subsample.

Perceived challenges during the first year at university

From the content analysis of the participants' responses, a total of 19 subcategories were identified, into which responses could be coded. These subcategories were then merged into five higher order categories: Social challenges, Practical challenges, Academic challenges, Adjustment challenges and Emotional challenges. Nine quotations of students did not fit into any of the categories and were disregarded.

The frequency of responses in each category for either question one or question two from the web-based part of this study and sample quotations are shown in Table 3.4.

Table 3.3: Sample characteristics

Demographic		
Age	Range	18 – 48
	Mdn	19
Sex	Female	157 (84%)
	Male	31 (16%)
BMI	Range	14.2 – 33.5
	M (*SD*)	21.8 (3.3)
Year of studies	Range	1 – 6
	Mdn	1
Ethnicity	Asian British	15 (8.0%)
	Asian Other	14 (7.4%)
	Black British	2 (1.1%)
	Black Other	2 (1.1%)
	Other	9 (4.8%)
	White British	102 (54.3%)
	White Other	44 (23.4%)
Marital status	Living together	16 (8.5%)
	Married	4 (2.1%)
	Separated	1 (0.5%)
	Single	167 (88.8%)
Housing situation	Living alone	12 (6.4%)
	Shared accommodation	74 (39.4%)
	Student halls	76 (40.4%)
	With parents	26 (13.8%)

Table 3.4: Frequencies for categories and subcategories and sample quotations for challenges

Category/Subcategory	Number of Responses (% all responses)	Sample Quotations
Category 1: Social challenges	**207 (32%)**	
Making friends	112 (17%)	"Getting to make new friends"; "Building close friendships"; "Building a whole new social network around yourself"; "Making friends requires some effort and going out with them quite frequently"; "To socialise/make friends with British and international students"
Meeting new people	39 (6%)	"Meeting to new people"; "totally new social environment - both exciting and worrying"; "meeting people who you get on extremely well with without feeling overshadowed by them"; "Social situations, making conversations with total strangers"; "Not knowing people, social awkwardness"
Social life	36 (5%)	"When's the next party"; "Getting a girlfriend"; "To enjoy badminton at weekends"
Managing old relationships	12 (2%)	"Realising your old friends may drift etc"; "Being away from people I knew really well"; "Keeping in contact with the family and old friends"; "Realising that the old network is divided"
Peer pressure	8 (1%)	"Being subjected to peer pressure and learning to say no"; "Not being pressured into going out just because your friends are"; "I don't really drink and a lot of them do which makes it harder as being the only sober person in a group of drinkers is possibly the least fun ever"; "Pressure that comes with first impression judgments on yourself"
Category 2: Practical challenges	**157 (24%)**	
Finances	43 (7%)	"Sparing money means not enjoying yourself as you should"; "Financially able to do some of the fresher's activities I really want to"; "Living with very little money"; "Being able to cope financially"
Managing living alone	41 (6%)	"Being autonomous"; "Learning to do everything for themselves cooking etc"; "Loneliness"; "Living independently"

Category/Subcategory	Number of Responses (% all responses)	Sample Quotations
Work life balance	41 (6%)	"Balancing life social and uni work"; "Learning to manage social life with study"; "Managing their time between leisure/co curricular activities and academic pursuits or sometimes finding time for future work-related things (internships maybe?)"; "I wanted to immerse myself 100% in university life; sports teams music and the arts socializing working hard on my course - it's quite a hard balance to achieve!"
Providing daily essentials	18 (3%)	"Health (eating right exercising and sleeping enough)"; "Adapting to independent domestic life (cooking cleaning washing shopping etc)"; "Living by themselves and doing the grocery shopping"; "Can't cook!"
Housing issues	8 (1%)	"Accommodation quality"; "If you have to share a room - sharing a room especially if you don't know the person"; "Living with people you don't know or don't get on with"
Physical challenges	6 (1%)	"Coping with disabilities alongside trying to do uni work"; "Maintaining a healthy weight"
Category 3: Academic challenges	**143 (22%)**	
Work load	51 (8%)	"Adjusting to the step-up in work load/work difficulty"; " Adapting to the amount of work and level or research required"; "Keeping up with work is difficult also the change from being one of the top to only average is difficult"; "Getting used to being a student again and adapting to the work load"
New study techniques	48 (7%)	"Getting accustomed to the university methods of studying after school methods of studying (at university students are expected to know how to study individually)"; "Getting used to self-directed learning and the work load. Being set deadlines and the freedom to work at your own pace"; "Changes from 6th form or college to have more freedom at university"; "Adjusting to new way of learning"

Category/Subcategory	Number of Responses (% all responses)	Sample Quotations
Time management	33 (5%)	"Managing time"; "Balancing time commitments"; "Getting work done on time"; "Creating a structure that works for me"
Course-related challenges	11 (2%)	"Not enjoying the course"; "Dropping out of uni or even just a general lack of interest in the course"; "The biggest challenge was coping with my disappointment in my degree"
Category 4: Adjustment challenges	**130 (20%)**	
Adjustment to new situation	58 (9%)	"Adapting to a very new situation"; "Being able to get settled and finding my way around"; "Settling in with a new life"
Being away from home	58 (9%)	"Missing home"; "Leaving home for the first time"; "Quite quickly miss the home comforts and that can then spiral into a need to be back at home"
Increased responsibility	14 (2%)	"Adjustment to independence and taking responsibility"; "Being responsible for yourself"; "Thinking I now had to be a complete grownup and not accept help from anybody else"; "Becoming completely independent"
Category 5: Emotional challenges	**20 (3%)**	"Dealing with loneliness and trying to overcome shyness and anxiety issues. This is especially hard as there is a perception that everyone is having 'the time of their life' and are finding the transition easy"; "Undiagnosed mental health problems then diagnosed mental health problems"; "Feeling lonely"

Social challenges

The most commonly mentioned challenges associated with starting university concerned the domain of social challenges. This primarily included finding new friends or building a social network. Some students generally reported meeting new people as challenging. Managing relationships with old friends was named as challenging by several students.

Of the total of 188 students who responded to the online survey, 59 students named finding friends as challenging for students in their first years at university, 53 students reported finding friends as challenging for themselves. Whereas a large proportion of students simply named "finding friends" as a challenge, fewer students reported difficulties with building with long-term friendships or commented on the quality of the friendship. Some students reported finding it difficult to find people, who they could relate to or shared common interests with.

Within the social challenges described by students, some students reported "meeting new people" as challenging in general. In that context, some reported feeling anxious about talking to new people.

Other social challenges reported by students included finding a partner, participating in social activities with others or overcoming cultural differences. Of 188 students, 12 students named managing previous relationships, for example, with friends from home. This was primarily an issue for students who had moved away from home. Students commented that they found it hard to stay in touch with their previous social network or experienced the relationship changing.

Peer pressure was reported by some students in the context of having to participate in social activities that they did not want to participate in.

Practical challenges

The second most common area of reported challenges included practical challenges, such as finances, managing living alone and accommodation. Of 188 students, 43 students reported money issues as challenging. This includes being able to live on a low income and participating in social activities at the same time. Other students

commented on the responsibility of managing their finances on their own or on being surrounded by students with more money than themselves. In line with the social challenges reported, many students (*n*=41) reported keeping the balance between working and socialising as challenging. Living alone or with others and managing a household was described as challenging by many students. This included managing daily essentials such as taking care of laundry, food or getting the right amount of sleep. The range of reported challenges also included issues around accommodation, such as the quality of housing, or getting on with flatmates or space. A relatively small number of students (*n*=2) reported physical challenges, such as disability or other health issues. Three students experienced weight gain or managing a healthy weight as challenging.

Academic challenges

A third large area of challenges was comprised of issues around academic problems. Twenty seven per cent (*n*=51) of students participating in the web survey named the university-related workload as challenging. Whereas most students mainly commented on the amount of work they have to cope with, others mentioned the difficulty or required skills as overwhelming.

The change of teaching methods at university and different skills required in coping with the workload posed a challenge for a similarly high number of students in this study (*n*=50). Managing time more generally was named as a challenge by several students (*n*=38). In contrast to issues around work-life balance, only responses focusing on managing time when it comes to academic matters were counted in this category. Only a small number of students reported challenges related to specific issues with their course (*n*=11). The responses of these students primarily focused on not liking the course or struggling with the knowledge requirements of the course.

Adjustment challenges

A third category of challenges named by students included those describing issues around adjusting to a new environment or situation. The largest proportion within this category was comprised by the categories "adjustment to new environment" and "moving away from home". In most cases, students simply named these challenges without further elaborating what aspects of the new environment or moving away from

home they experienced as challenging. Some students specified issues around moving to a large city, such as finding your way around or transport.

Fewer students mentioned issues around increased responsibility (*n*=17). Challenges were grouped into this category if students did not further specify which responsibilities they refer to or what specific challenges arose from those responsibilities.

Emotional challenges

When asked about challenges they experienced during the first year of university, some students (*n*=14) mentioned specific emotional challenges. This ranged from loneliness, anxiety, mental health problems to dealing with sexual assault.

Problems

In the second part of the web-based survey, students could report issues that troubled them at the time of the survey, how long these issues had been troubling them and how much they had affected them over the previous week. Students had the opportunity to write about a maximum of two issues that currently troubled them. Of the 188 students, who participated in the web-based survey, 138 completed the section on troubling issues and reported at least one issue. Of those students, 62 reported a second issue. The numbers exclude students who responded to the questions with "no" or responses that could not be coded (see below).

Responses to the two questions were coded into 10 categories. Some of these subcategories were grouped together and a total of six main problem categories emerged: Relationships with others, Health, Academic performance, Finances, Career/Future and Accommodation. A total of 32 responses from students did not fit into any of the categories above. This number was relatively high due to the fact that some students responded with "nothing", N/A" or similar; or provided an unclear response (e.g. "everything", "lots of things").

The frequency of responses in each category for either question on current problems from the web-based part of this study and sample quotations are shown in Table 3.5.

Table 3.5: Frequencies for categories and subcategories and sample quotations for problems

Category/Subcategory	Number of Responses (% students affected)	Sample Quotations
Problem area 1: Relationships with others	**73 (53%)**	
Relationship with partner	61 (44%)	"I do not know if I should stay with my boyfriend or not because although I love him we have been together for three years and that is a long time as I am only 20"; "Going through a divorce"; "Lack of intimate relationship"
Family	12 (9%)	"Family problems"; "The well being of my family- emotionally and physically"; "Parents going through divorce"
Problem area 2: Health	**60 (43%)**	
Health	31 (22%)	"I have a couple of health concerns"; "I have chronic fatigue often feel weak and unable to function. Have brain fog can't concentrate. I have had to take a year out of my studies as I was taking too much time off doctor has signed me off sick"; "My diabetes my body"
Mood	21 (15%)	"Mild depression"; "Being a perfectionist feeling bad about my personality soul-searching loneliness"; "My mood"
Anxiety	8 (6%)	"Anxiety issues prone to worrying etc."; "I've recently started going back to university after having agoraphobia so that's pretty hard"; "The after affects of the attack"
Problem area 3: Academic performance	**47 (34%)**	"Getting a 2:1 next year"; "I've failed one half-credit module"; "Worries about passing exams"
Problem area 4: Finances	**33 (24%)**	"Financial aspects of going into second year (finding a flat and paying for 12 month contract + bills + food + leisure)"; "I'm worried about having enough money to finish my degree"; "Financial difficulty"
Problem area 5: Career/Future	**25 (18%)**	
Career	14 (10%)	"The prospect of having to find a decent grad job soon"; "Trying to get a job"; "Knowing that I have chosen a good career path and will be able to get into the universities I want to for my postgraduate study"

Category/Subcategory	Number of Responses (% students affected)	Sample Quotations
Future	11 (8%)	"General fear for the future"; "Not knowing what I'm going to do in life"; "The future where I'm going what my options are"
Problem area 6: Accommodation	**8 (6%)**	"The unwillingness of my flatmates to adhere to basic hygiene conventions in the kitchen"; "My partner and I are currently in-between houses so homeless...staying at various friends houses so home, life not very stable - this hasn't helped me feel secure during the start of uni"; "Living with my ex boyfriend incredibly stressful"

The category "Relationships with others" included problems with a current or ex-partner, unrequited love, problems with building a social network and problems with close relatives or parents. Issues described in the "Health" category included physical health problems (e.g. overweight, diabetes, bowel problems) and mental health problems. Some students described having been diagnosed with a mental health problem (e.g. eating disorders, depression), whereas other students reported symptoms indicating a mental health problem (low mood, anxiety, panic attacks, flashbacks, suicidal thoughts). In the category "Academic performance", problems around achieving a particular result, exams, coping with the academic workload and deadlines were coded. Problems about being able to finance studies, afford living or debts were grouped into the "Finances" category. The category "Career/Future" consists of two issues around either career opportunities or more general worries about the future. In most cases, students did not specify further what particular aspects about the future they were concerned about. However, it was assumed that most of the worries about the future related to thoughts about finding a job or having chosen the right career. Hence, they were grouped together with more specific problems around career. In the category "Accommodation", students reported any issues around accommodation, such as the quality of housing, finding accommodation or problems of living with others.

3.5.2 Impact and duration of problems

In addition to describing the issues, students could indicate how much the described issue had affected them during the previous week and for how long they had been concerned about the problem.

Figure 3.1 shows how much the first or second (if reported) problem had affected students during the previous week on the seven-step rating scale ranging from "Not at all affected" (1) to "Severely affected" (6). For the first current problem, students reported a mean impact of 4.02 (*SD*=1.44) on the rating scale. The mean for the second problem was 2.18 (*SD*=1.18).

Figure 3.2 and Figure 3.3 show the duration of concerns for the problems described by the students. As can be seen in the figure, the majority of students reported having been

concerned about the problem "Less than one month", "Between one and three months" or "Over three months but under one year". Considering that the sample contained students within their first three years at university with most students being in their first year, the results suggest that the onset of the problems most likely falls during the time at university. Most of the problems with a duration of concerns of "one to five years" or "more than five years" were health problems. On average, the duration reported for a second issue currently affecting the students was longer than the duration reported for the first problem.

The results from the questions on impact of the problem and duration suggest that students, who experienced a second current problem, reported a problem that had affected them for longer, but at a lower intensity recently.

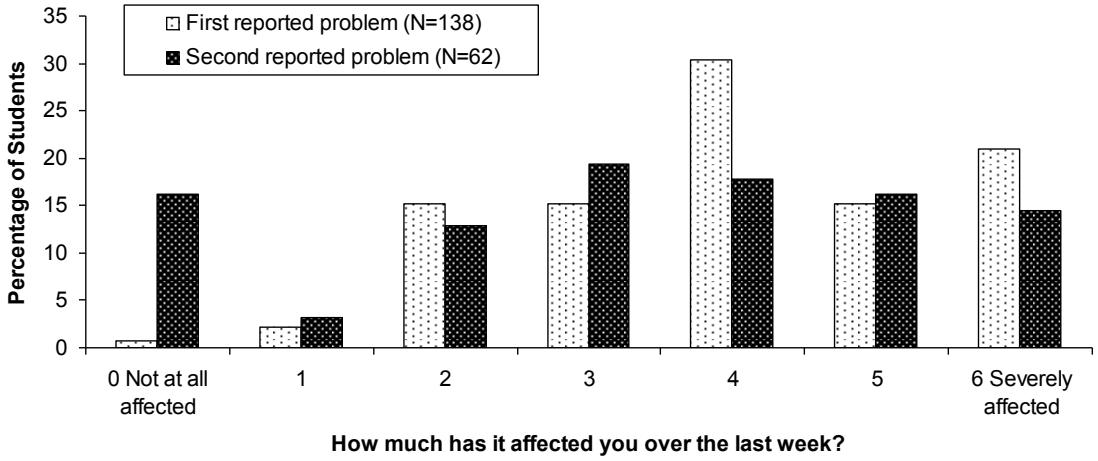

Figure 3.1: Responses on impact of problems

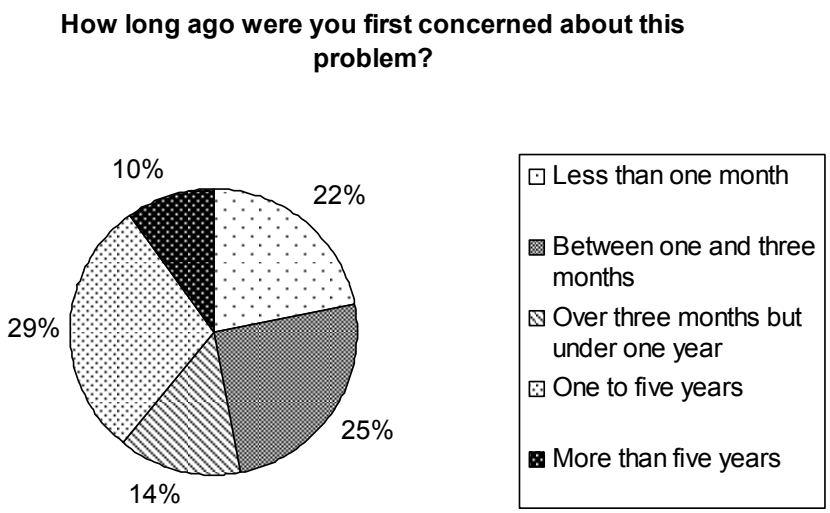

Figure 3.2: Duration of concerns for first problem named

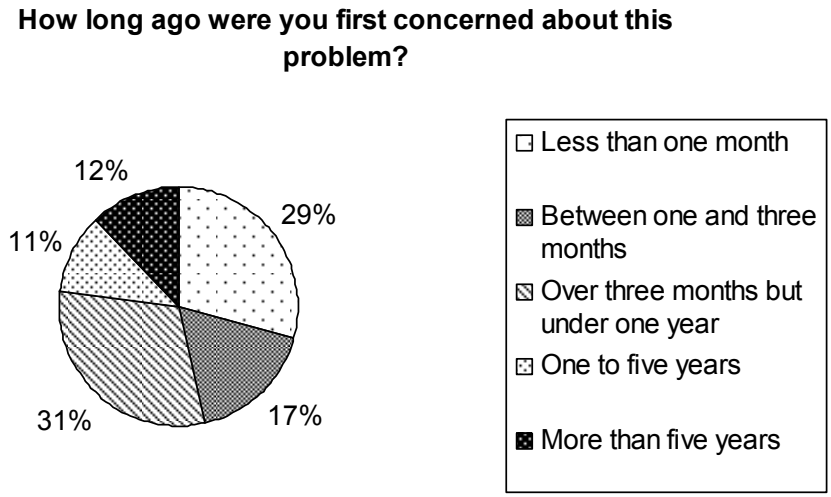

Figure 3.3: Duration of concerns for second problem named

3.5.3 Association with risk

An additional analysis was performed to investigate whether the risk status of the students (see Chapter 2) had an impact on the reported challenges or experienced problems. For 159 of the 188 students completing the web-based questions on challenges and problems, data about their risk status were available. This is due to the fact that some students did not complete all necessary questionnaires for the clusters to be computed.

For each student, a binary variable was created indicating whether they reported experiencing a particular challenge. Chi-square tests were then performed to examine

whether the likelihood of an individual reporting a particular challenge (Question 2: What are\were the biggest challenges for you?) was affected by the risk status (high/low) from the two-cluster solution described in Chapter 2.

Table 3.6: Results of chi-square test between student risk status and reported challenges

	Risk status			
Reported challenge	Low %	High %	χ^2 (*df*)	*p*
Social	40.0	44.1	0.188 (1)	.665
Practical	25.6	23.5	0.061 (1)	.805
Academic	29.6	32.4	0.096 (1)	.757
Adjustment	19.2	17.6	0.042 (1)	.837
Emotional	5.6	17.6	5.167 (1)	.023

Table 3.6 shows the results of the chi-square tests performed between the student risk status and the reported challenges. Only the relationship between risk and reporting emotional challenges was significant. Of 125 students at low risk, only seven (5.6 per cent) reported emotional challenges, whereas in the group of students at risk (*n*=34), six (17.6 per cent) reported experiencing emotional challenges. The odds ratio for emotional challenges was 3.6, suggesting that students at high risk are almost four times more likely to experience emotional challenges.

3.5.4 Experienced problems and risk

Similar to the procedure outlined above, binary variables were created for each category of problems (Question 3 & 4: Is there anything that troubles you at the moment? & Is there anything else that troubles you at the moment?), indicating whether a student was currently affected by the problem. For these variables it was irrelevant, in which of the two questions on current problems the student reported the issue. As students' responses could describe multiple problems, an additional variable indicating the total number of reported problem categories was created by adding up the binary responses for all categories.

An independent samples *t*-test comparison of the number of reported problem categories between students at low risk and students at high risk unsurprisingly revealed that students in the high risk group endorsed more problem categories. On average, students at risk reported two problem areas (*M*=1.85, *SD*=1.13), whereas students with

a low risk reported only one area of a current problem (M=0.9760, SD=0.83). This difference was significant (t(157)=-5.04, p<.001) with a medium effect size of r=.37.

For each area of described issues, chi-square tests were performed to investigate whether being at low or high risk affects the likelihood of reporting problems in a particular area. The results of this comparison can be seen in Table 3.7. As can be seen from the table, significant differences in reported problems areas between the groups were observed in the areas "Relationships with others", "Health" and accommodation.

Table 3.7: Results of chi-square test between student risk status and reported problems

	Risk status				
Reported problem	Low %	High %	χ^2 (df)	p	OR
Relationships with others	29.6	52.9	6.436 (1)	.011	2.7
Health	16.0	58.8	26.034 (1)	<.001	7.5
Academic performance	20.0	29.4	1.379 (1)	.240	n.s.
Finances	18.4	17.6	0.010 (1)	.920	n.s.
Career	11.2	11.8	0.008 (1)	.927	n.s.
Accommodation	2.4	14.7	8.471 (1)	.012	7.0

Note: n.s. = not significant

Figure 3.4 summarises the percentages of students who reported currently being troubled by a particular problem for low risk and high risk students. Regardless of risk status, approximately the same proportion of students reported currently experiencing "Academic", "Financial" and "Career/Future" problems. Significant differences in the proportions of students who reported currently experiencing a particular problem, were observed in the categories "Relationships", "Health" and "Accommodation". Overall, students were more likely to report problems in these areas if they were at high risk. Only 30 per cent of students at low risk reported "Relationships" problems in contrast to 53 per cent of students at high risk. In the category "Health", the differences are more dramatic. Whereas only 16 per cent of students in the low risk group reported difficulties in this area, 59 per cent of students in the high risk group reported physical or mental health problems. Significant differences were also observed in the "Accommodation" category. Of students at low risk, only 2 per cent reported experiencing problems in that area vs. 15 per cent of students at high risk. However, it is important to note that the percentages in both groups are based on a small number of students actually describing this issue (three vs. five students). The accommodation

issues described by students were furthermore often associated with relationship problems (e.g. when students broke up with a partner who they were sharing a flat with). Hence, the number may be closely related to the differences observed in the "Relationship" category.

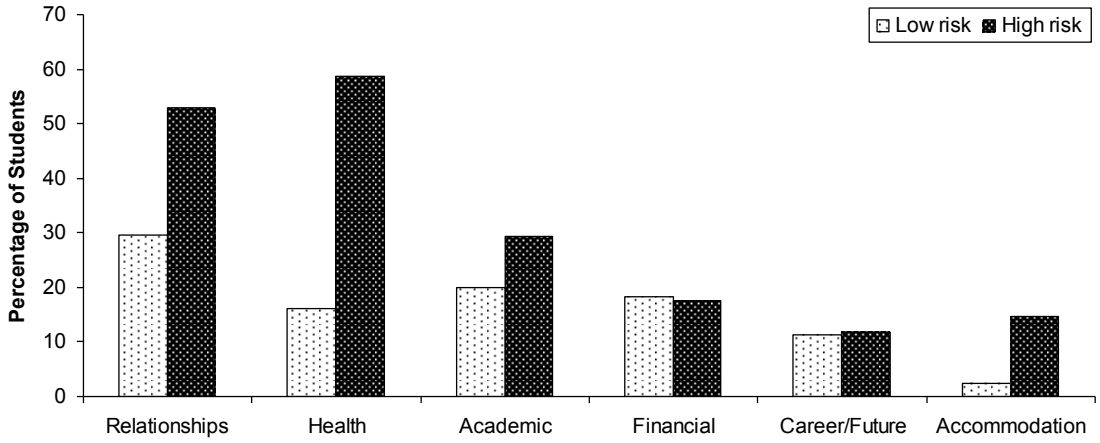

Figure 3.4: Percentage of students reporting problems in a particular area by risk group

Independent sample *t*-tests were performed to investigate whether the perceived impact of the problems during the last week was different between high risk and low risk students. For both problems (first or second), students at risk reported greater impact of the problem during the previous week (first problem: *M*=4.79 *SD*=1.20, second problem: *M*=2.74 *SD*=2.35) in comparison to students at low risk (first problem: *M*=3.04 *SD*=1.89, second problem: *M*=1.42 *SD*=1.93). The difference was significant $t(82.718)=-6.579$, $p<.001$ and $t(45.737)=-3.007$, $p<.01$ with effect sizes of $r=.59$ and $r=.41$.

3.5.5 Gender differences

Considering the gender differences in help-seeking behaviour known from the literature, a number of chi-square tests were performed to investigate gender differences in the experience of challenges as well as the experience of problems, using the binary variables described above. Table 3.8 and Table 3.9 show the chi-square test results of gender differences for challenges and reported problems.

Table 3.8: Results of chi-square test between gender and reported challenges

Reported challenge	χ^2 (*df*)	*p*
Social	1.246 (1)	.321
Practical	0.037 (1)	1.000
Academic	2.494 (1)	.140
Adjustment	0.219 (1)	.804
Emotional	0.053 (1)	1.000

Table 3.9: Results of chi-square test between gender and reported problems

Reported problem	χ^2 (*df*)	*p*
Relationships with others	0.889 (1)	.409
Health	2.686 (1)	.115
Academic performance	3.902 (1)	.062
Finances	0.181 (1)	.791
Career	1.156 (1)	.379
Accommodation	2.679 (1)	.127

No significant differences between male and female students were observed for either challenges or experienced problems. When it comes to the experience of academic problems, a trend was observed with a higher proportion of female students reporting such issues. An independent samples *t*-test comparing the number of reported problem areas between male and female students revealed no significant difference ($t(186)=-1.344$, $p=.180$), although female students on average reported more problem areas ($M=1.18$, $SD=0.88$) than male students ($M=0.94$, $SD=1.21$).

3.5.6 Focus groups

The web-based part of this study provided information about challenges students experienced when they started their courses and issues that troubled them at the time of the assessment. In the focus groups, the emphasis was also on students' experiences of challenges and in addition on how students can best be supported with these challenges.

Sample

A total of 10 students participated in three focus groups. Table 3.10 shows the demographic characteristics of students in the focus groups. All students were between 18 and 25 years old and were single.

Table 3.10: Demographic characteristics of students in the focus groups

Demographic		
Age	Range	18 – 25
	Mdn	21
Sex	Female	9 (90%)
	Male	1 (10%)
Ethnicity	White British	5 (50%)
	White Other	2 (20%)
	Asian Other	1 (10%)
	Other	2 (20%)
Marital status	Single	10 (100%)
Qualification	A-Level	4 (40%)
	University Degree	6 (60%)

Similarly to the results on challenges from the web-based part of this study, students reported challenges that can be categorised into social challenges, practical challenges, academic challenges, adjustment challenges and emotional challenges. No additional categories were identified from the responses in the group. Students in the focus group did not report challenges about "Managing old relationships", "Work-life balance", "Physical challenges" or "Emotional challenges". Examples for each category are briefly presented in Table 3.11.

Table 3.11: Categories, subcategories and sample quotation for challenges in the focus group

Category/Subcategory	Sample Quotation
Category 1: Social challenges	
Making friends	"And at the beginning it's always the same questions - 'What's your name? Where do you come from? What are you studying?' (…). But to carry on you have to find something you both like or both want to talk about (…)"
Meeting new people	"Well, um, I find getting along with people difficult, yeah. Thing is, I don't really mind talking to people but I can't really initiate it."
Social life	"I moved into halls. In the first year it was quite good with everyone, like going out and doing stuff and then you start and everyone is like got their own stuff going on, so you feel a little bit like: I got to cook. And then you don't know who's around and everyone is in their little like closed rooms."
Peer pressure	"I was at home so for me I had that regret that I hadn't moved out because I felt like 'Oh you're not fitting in as well' or 'you're not having that same experience.'"
Category 2: Practical challenges	
Finances	"But I'm trying to save money. It's about organization, isn't it? I mean obviously it's more expensive here compared to home but I just need to cut down some expenses or something that I don't really need, you know. So I need to learn to evaluate the costs and benefits when I make a purchase or a decision."
Managing living alone	"You're on your own, you're away from your family and you literally have to do everything for yourself."
Providing daily essentials	"I think, I really like sort of really mixed, like sometimes I really like it and then it was like ironing, ..., cooking, and then sometimes it was just a thing to worry about, like doing the laundry until three in the morning, cause you realise you haven't got any clothes"
Housing issues	"I was kind of disappointed because the accommodation office, because I'm a 1st year student and I'm International, in theory they should get me somewhere to stay but when I'm here they didn't get me anywhere to stay"
Category 3: Academic challenges	
Work load	"Yeah um in the first week it wasn't really much work but in the second week to now it's not going to be like that it's going to be very hard. You don't really do much in the classes but they give you a lot of things to read."

Category/Subcategory	Sample Quotation
New study techniques	"I could tell that there was a big difference between high school and university because at university it's mainly independent work and we get less guidance."
Time management	"Well I think I've learnt not to leave things till the last minute."
Course-related challenges	"I'm finding it a bit annoying the way that, not the way the course is structured because the course is great and the standard of teaching is great, better than I expected. But everything is on this e-learning website which our lectures say apparently students perform better since this e-learning system has been implemented but I really don't like using it and it's just frustrating."
Category 4: Adjustment challenges	
Adjustment to new situation	"I moved down from Scotland, and like my tiny little island and it was from the middle of nowhere so it was a big shock, even just getting the tubes and stuff."
Being away from home	"Yeah a big adjustment. Um, well you know I got homesick a little bit. And when I was at Warwick studying I had a friend from Ireland and she also got homesick a lot."
Increased responsibility	"You've got all the freedom and you haven't started worrying about money, yet, so it's like you want to go out, but then yeah, when the work starts piling on, it's get quite tough, cause you are by yourself."

In contrast to the information collected in the web-based part of the presented study, the information from the focus groups provided a deeper insight into the nature of the different challenges.

From the students' comments on social challenges, it became clear that they were more likely to experience social situations and making friends as difficult, if they described themselves as rather shy. Other students found it easy to initiate the first contact, but then found it hard to build deeper and lasting relationships. Occasionally, students mentioned that at times they would rather be on their own and not engage in any social contacts or activities.

Several students who participated in the focus groups were international students. It became clear that many of the practical challenges described by the students were associated with the fact that they moved from another city or country. When it came to

challenges about managing living alone or providing daily essentials, some students mentioned that they felt they were not organised enough to manage these issues or missed the feedback normally provided by their parents.

One interesting aspect of comments on academic challenges in the focus groups was that students described that the workload at university actually varied and that they experienced the variation between very intense weeks and rather quiet weeks as challenging. Course-related challenges often arose when there was a mismatch between the students' expectations of the course and the actual experience. This could include the content of the course as well as the teaching methods used. The difference between learning techniques at school and at university was often named as a challenge. In particular, students commented that it was the lack of guidance and feedback on performance that made it difficult.

In the web-based survey, little information was provided about why students experienced the adjustment to a new environment or being away from home as challenging. In the focus group, students elaborated on these issues in more detail. Many participants commented that the adjustment to a new city was difficult. This included navigating the city, using public transport or more generally the increased pace. Being away from home was often experienced as challenging as it was associated with a lack of practical support (e.g. food, shopping, laundry), but also emotional support.

Support for students

In addition to questions about what students experienced as challenging during the transition from school to university, one aim of the focus groups was to investigate what support mechanisms were most helpful. The mechanisms identified by students were grouped into social support, institutional support and activities. Social support included support received from either friends or family:

> *"I think that for me, I've always been in quite close contact with say my sister. (…) I mean, also having her, that connection, it was having someone to talk to who's in the same situation I think helps."*

"There were some third year students and (…) in my hall I became good friends with. So although I wasn't in a group I had friends who were older and who I could talk to."

Many students positively commented on institutional support, particularly on the support received from personal tutors:

"I can talk to mine about anything; (…) mine knows me really well and takes the time to do it as well. He's really nice and understanding."

"I think everyone's pretty helpful around here, especially my personal tutor. (…) He's amazing (…) gave me some great advice about getting along with people from different cultures."

"I think I find most help in the student advice service when they help me with my visa extension application. I didn't quite know what to do and I got a few things wrong and people there were really friendly and (…) they helped me in the end."

For some students, engaging in activities such as hobbies, sport or societies was experienced as helpful for adjusting to university life:

"I joined the cheerleading squads and it was actually the best thing I ever did (…) and they are just the best people like I've ever met. They are brilliant. So it kept me here."

"I probably just play the piano a little so that really helps."

Hurdles to getting support

Students in the focus groups were asked what could prevent them from seeking support in any form. The comments included issues around accessing the services, such as the location of counsellors at the college or the amount of contact that was necessary to get access to services:

"Dragging yourself over to the Strand when you're not ever based there. It's just such an issue"

"The fact that you have to go through lots of people before you can access it, which is obviously just to encourage you to talk to people. But if you don't- and that's the problem, then..."

"It's more stress trying to get help. It really is."

Occasionally students experienced being referred back and forth between online information and face-to-face support:

"I was looking for some information and I needed some help so I talked to someone and the person actually referred me back to the same website. And I was like -'if I could find a solution why the hell would I want to call you?' But yeah. Sometime it can be very frustrating."

"Directions, Websites. yeah because once or twice I emailed them and I asked 'I've got this problem and I want to sort it out, who do I see?' and they say 'the information is on the website of Kings College London and here is the link.' And I went to the link and it says you go and ask them what to do."

Another hurdle identified by students in the groups was the belief that support at university should only be available to students suffering from more severe problems and was not for general advice:

"And you just think that you would call up and they'd be like 'oh that's not...it's not what we're here for (…)' Because you do just think you're being silly because everyone else around you seems to be coping so well."

"When someone says counselling, you conjure up all these funny images in your head. Like who would have it? It must be someone like really extreme. (…) If it's something you're struggling with then it's a big enough thing to talk to someone about"

Some students named stigma associated with accessing counselling support at university as a hurdle for using support:

> *"There's a lot of stigma surrounding like counselling and like going for help. But once you've done it it's not as bad as you would think beforehand. I think it's just making it less scary for people."*

> *"(…) the advert for counselling and what it says under it is ' are you suffering from anxiety, depression, eating disorder, self-harm?' or anything, and unless you've been diagnosed with that you don't think of yourself as that kind of person. And it's just like putting a massive label on it (…)."*

When it came to the quality of support such as counselling at university, students expressed concerns about the usefulness of the support:

> *"Um they just give you very general advice, they don't really listen to you and don't really offer you personalised advice."*

> *"And it seems to me all you do is you go there, you travel the bus, they don't really give you very good advice because they don't know you well enough."*

3.6 Discussion

Students described social challenges, practical challenges, academic challenges, adjustment challenges and emotional challenges in both the web-based survey and the focus groups. Unsurprisingly, no differences were observed between the challenge categories from the web-based survey and the ones identified in the focus groups. However, students in the focus groups did not tap into all the challenges identified in the survey.

As information on personality and mental health was available for most of the students who participated in the web-based survey, it was possible to investigate the impact of these factors on the experience of challenges or problems. Interestingly, no significant differences were found between high and low risk students in terms of most of the issues that students described as challenging within the first few years at university.

Only with emotional challenges, a higher proportion of students at high risk reported having experienced such challenges in comparison with students at low risk. It is important to note that no information about causality is available here. One possible explanation could be that students who reported emotional problems are more likely to suffer from symptoms of common mental health problems such as low mood or engage in unhelpful coping behaviours. Hence they are more likely to be clustered within the high risk group.

In the web survey, students had the opportunity to describe issues that currently troubled them and named issues around relationships, health, academic problems, finances, career and accommodation. Students could indicate how long they had been struggling with the problem and it became apparent that for most students the onset of the described issue fell into their time at university. When comparing the number of problems by which students currently felt affected, it became apparent that students at high risk reported a greater range of categories than students at low risk, that is, they experienced difficulties in more areas than students at low risk.

The results suggest that the risk status of a student does not necessarily affect the experience of what is challenging and what is not. Both groups of students are faced with the same developmental challenges and perceive similar areas as being difficult. However, it seems that for students at risk, these challenges are more likely to turn into problems.

It is not surprising that students in the high-risk group generally reported currently being bothered by something, particularly in the areas “Relationships” and “Health”, and this finding links with the data presented in Chapter 2. Together with the results from the quantitative study on risk factors and personality it suggests that students not only reported higher frequency of mental health symptoms or problematic behaviours, but also experienced this as troubling and interfering with their lives. This is important in the way that it suggests both: an objective difference in mental health of students and a subjective experience of that.

In addition to questions on challenges, the focus groups aimed to explore what kind of support mechanisms students used and what might hinder them in seeking support.

Interestingly, most students were aware of institutional support mechanisms at university, such as personal tutors, student counselling or student advice. However, the results from the focus groups also suggest that students were hesitant to seek face-to-face support for everyday problems and considered these services to be designed for students with severe mental health problems. This was either due to the fact that students experienced difficulties accessing the services or they were dissatisfied with the quality of the services received. Overall, this finding is in line with previous research on student populations and young adults, who seem less likely to seek support from a health professional (Chew-Graham et al., 2003) and associate getting help with stigma.

In line with research on the transition from school to university, many students reported homesickness as a major challenge or stressor in both the focus groups and the web survey (Fisher & Hood, 1987).

Amongst challenges identified by students, social challenges were the most frequently named ones. This is not surprising and in accordance with previous research on students, building stable friendships and a social network at university is one of the most important factors for managing the transition to university (Kantanis, 2000). In the focus groups, students frequently named social support as a helpful mechanism for dealing with the transition, which is in line with older studies on student wellbeing during the first few years at university (Gall, Evans, & Bellerose, 2000; MacKie, 2001).

Little information was available on differences between male and female students. The proportion of males providing information on challenges (16 per cent) in the web-based survey was similar to the proportion of males participating in the study in general (20 per cent). Significant differences were neither observed for the experience of challenges nor for the report of currently perceived challenges. Although the literature on student mental health generally suggests that female students are more affected by mental health problems, this pattern was not observed in the present study. Most likely, the fact that the study attracted students with a general interest in health topics and personality and that only a subset of students provided information in the web survey, accounts for this result. Only one male student took part in the focus groups, making it difficult to draw any conclusions on gender differences from the results.

Overall, the findings of the present study are largely in agreement with the findings from a study by Kantanis (2000), which suggested that students enter university positively anticipating a new social and learning environment. Students who fail to fully manage the transition from school to university often report difficulties with creating a new social network as well as problems with the workload and difficulty of their course.

3.6.1 Strengths

A major strength of the presented study is the combination of quantitative and qualitative research methods. Whereas the web-based part of the study provided large quantities of data at relatively low level of detail, the focus groups allowed for a much more specific investigation of students' experiences.

Having a relatively large amount of data from the web-based part allowed quantifying the responses from students into frequencies, percentages and binary variables. These data provided an opportunity to link the results from this chapter with the results from the previous chapter, particularly the risk status of students to provide a more in depth understanding of the subjective experience of students' first years at university.

3.6.2 Limitations

Responses in the web-based part of this study were generally very brief and provided little information about the students' experience of university related challenges. In most cases, students only provided keywords or bullet points without further explanation. Hence, data analysis was primarily restricted to counting the occurrence of the challenges named and categorising them. One the other hand, this allowed gaining an overview of how prevalent the described issues are across students.

Another limitation of the presented study was the limited response of students in the focus groups. Originally, the focus groups were designed to include more students and if possible students from different disciplines and at different stages in their studies. Although the response to the circular email used to recruit participants was satisfactory, students eventually decided not to take part or did not attend on the day. Hence, focus groups were smaller and the results represent the views from a very limited sample.

3.6.3 Implications for intervention development

In the present study, areas were identified that students experience as challenging when they start university.

Due to the fact that many students experienced practical issues as challenging, it has to be considered whether a web-based intervention for students should include help with such practical aspects of starting life at university. This could include information on how to find accommodation and how to live with a very limited budget.

Academic challenges reported by the students included issues around the amount of work, managing time and particularly new ways of learning, compared to school. A web-based prevention programme could address these issues.

The most commonly reported area of challenges included social challenges around making friends or meeting new people in general. It is questionable, whether this aspect could be addressed with an internet-based programme. One could argue that this is a general developmental challenge associated with starting a new life stage and that the vast majority of people will manage these challenges at some point. In addition, an internet-based application might not be the most suitable medium for a social skills intervention.

Overall, it is important to note that in this study neither practical nor academic nor social challenges were associated with the risk status of students. Hence it is rather questionable whether there is a need to address these challenges in a prevention programme for common mental health problems in students. Although they were experienced as challenging by most students, they may not specifically contribute to the development of mental health problems. In this study, only emotional challenges were more common in students at high risk for developing mental health problems. As discussed above, it is possible that these emotional challenges account for some of the symptoms of mental health problems and therefore contribute to the risk status of a student. However, the results emphasize the need for addressing the ability of dealing with emotional ups and downs in the prevention programme.

In the focus groups, students reiterated the fact that students are less likely to seek help from a professional regarding their mental health. This is partly due to the associated

stigma, the fear of long-term career consequences and the hurdles of accessing services. This supports the idea that a web-based intervention may offer an alternative to traditional student support mechanisms, which can overcome the problems outlined above. In particular, an internet-based intervention should normalise mental health problems for students to reduce personal stigma and at the same time offer anonymous support.

Chapter 4 - The development of a trait-focused internet-based prevention programme for common mental disorders in university students

4.1 Chapter scope

The following chapter describes the development of the prevention programme targeting common mental health problems in students. This chapter consists of two parts. The first part describes the development and content of an internet-based trait-focused intervention as well as an active control intervention. In the second part of this chapter, strategies for the development of computerised personalised feedback in e-health application are described along with how these strategies were applied to feedback for the intervention in this thesis. Parts of this chapter were published in an article in the Journal of Mental Health (Musiat et al., 2012).

4.2 Introduction

A dearth of literature is available on how to develop self-help interventions. The Medical Research Council (MRC) published a framework for the design and evaluation of complex interventions to improve health (Campbell et al., 2000). In this framework, complex interventions are considered to be interventions with multiple components and a five-stage process for the development and evaluation of such interventions is suggested. In the "preclinical stage", the relevant theory is examined to identify the optimal intervention and hypotheses. The next two stages ("modelling" and "exploratory trial") involve identifying intervention components and working mechanisms, as well as developing a feasible protocol for trialling the intervention. In the "definitive randomised controlled trial" stage, the intervention should be compared to an appropriate alternative, such as a placebo intervention or standard care in a randomised controlled trial. The final ("long term implementation") stage involves the long-term implementation in more uncontrolled environments.

Although the MRC framework has been very influential, a number of limitations have been identified (Craig et al., 2008). The framework assumes linearity of the stages and many of its recommendations lack empirical evidence. Guidance on the development and implementation stages and on highly complex interventions outside the health sector is limited. Finally, the model does not address the social, political or geographical context of an intervention (Craig et al., 2008). The framework has recently been revised and acknowledges the unclear boundaries between complex and simple interventions.

Furthermore, the revised framework addresses the aspect that development, evaluation and implementation of an intervention are cyclical rather than linear (see Figure 4.1).

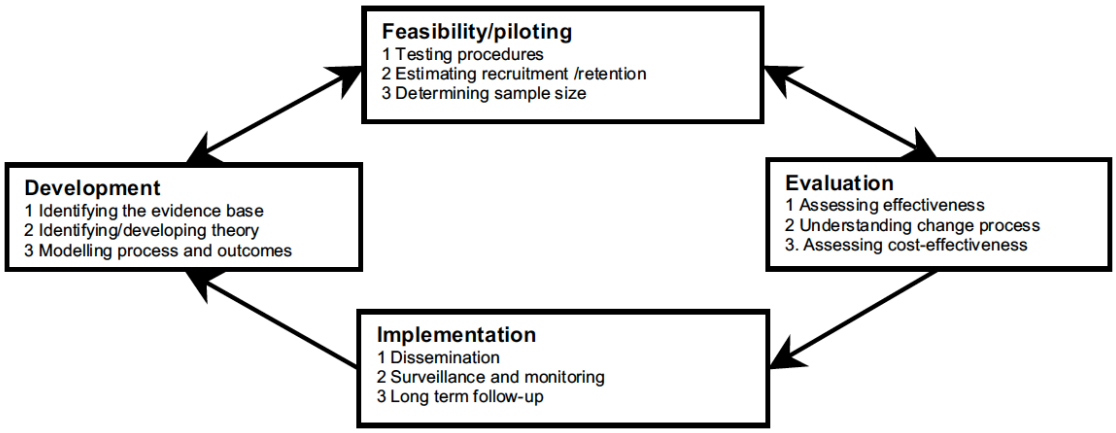

Figure 4.1: Key elements of the development and evaluation of complex interventions (from Craig et al., 2008)

In the development stage of an intervention, the revised framework emphasizes the importance of identifying available evidence in a field, ideally by conducting a systematic review. Ultimately, the review of relevant evidence should result in the development of a theory on how the intervention can achieve the desired outcome. Modelling the process and outcomes includes the actual design of the intervention components, how they can be delivered and how the effectiveness can be measured. According to the MRC, the main questions to be addressed in the development stage of an intervention are what kind of outcomes the intervention is expected to achieve, how these outcomes can be achieved, whether a theory is underlying that can be applied systematically to all intervention components, and whether the intervention can be fully described for the purpose of evaluation and replication (Craig et al., 2008).

The National Institute for Health and Clinical Excellence (NICE) has published guidelines for "Behaviour change at population, community and individual levels" (National Institute for Health and Clinical Excellence, 2007). These guidelines emphasize that life transition points, such as leaving school or entering university, offer an important opportunity for health interventions. Furthermore, the guidelines point out that effective interventions should target specific groups and be tailored towards their users. According to NICE, it is possible that users may not prioritise long-term health and that a programme therefore should focus on more immediate needs that

ultimately promote health over time. It is emphasised that health interventions should be "based on a needs assessment or knowledge of the target audience" (National Institute for Health and Clinical Excellence, 2007, p. 20) and that the target group should be involved in the development, evaluation and the final implementation of a programme.

The aim of this study was to develop an internet-based prevention programme for common mental disorders in students. Given the use of the internet and the fact that the intervention did not include any contact between the students and a health professional, this intervention can be considered a self-help intervention. Different definitions of what constitutes self-help have been proposed. Whereas broader definitions consider any treatment that can be accessed without consulting a health professional to be self-help (Jorm, Christensen, Griffiths, & Rodgers, 2002), other more specific definitions emphasize the fact that users have to be able to work independently with the material (Cuijpers, 1997). Lewis et al. (2003) reviewed self-help interventions for mental health problems and suggested that "self-help approaches utilise a clear model and structure of treatment which focus on problems of relevance to the patient" (Lewis et al., 2003, p. 9). Furthermore, the intervention should contain minimal or no input from a health professional along with instructions for the user to improve their abilities of managing or coping with their problem. In their review, Lewis et al. note that most of the reviewed self-help interventions are based on a cognitive-behavioural model due to the fact that cognitive-behavioural therapy (CBT) often requires the patients to do "homework". Cognitive-behavioural therapies are based on adult learning models and are designed to provide patients with reproducible skills to help them deal with their disorder. The role of the therapist, therefore, is one of a coach or teacher (Musiat & Schmidt, 2010).

Although there is relatively little literature available on how to actually design health intervention programmes, the guidelines have several things in common: they suggest that any health intervention should have an underlying theory or model of behavioural change. Furthermore, they suggest the involvement of potential users in the development of an intervention, as well as at other stages. In the following section, it is

outlined how these recommendations were applied to the development of this intervention.

4.3 Intervention development process

The process of developing a prevention programme for common mental disorders in students is shown in Figure 4.2. Following the study on personality risk factors and mental health (see Chapter 2), intervention components and an outline of their content were proposed. Evidence-based self-help resources relevant to each component were reviewed and the detailed content of each module was developed. To address the need for an underlying theory for the intervention in general and the individual intervention components, different sources for self-help materials for the proposed intervention components were explored including available web-based interventions for common mental disorders in students and self-help books. Self-help books were chosen based on evidence for the efficacy of the approach (i.e. controlled trials), their popularity (i.e. selling rank) or recommendations by experts and students. In addition, therapeutic manuals for the targeted mental disorders were explored for content that could be translated into web-based prevention. After designing specific content, the intervention modules were reviewed by students and a panel of experts of mental disorders common in students (i.e. depression, anxiety, substance abuse and eating disorders). To accommodate the recommendations by the NICE guideline on involving the targeted group in the development, the feedback from students (and experts) was used to revise the intervention format and content.

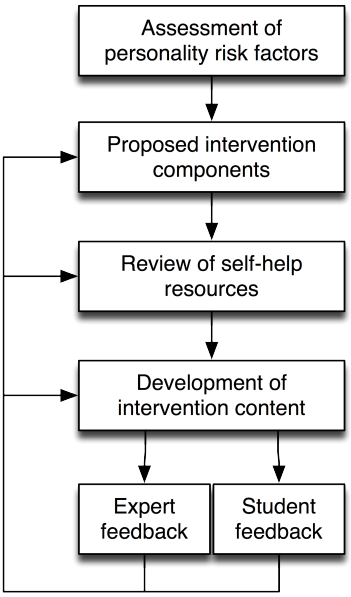

Figure 4.2: Development process of the student prevention intervention

Guided by the results of the web-based study on personality risk factors and mental health (see Chapter 2) and the qualitative studies on challenges/stresses of student life (see Chapter 3), the individual intervention components were chosen. In line with the recommendation by the MRC, two separate active interventions were developed as to allocate students to either of them in a randomised controlled trial. One of these interventions was cognitive-behavioural and designed to target personality risk factors and unhelpful behaviours and thoughts resulting from the interaction between the risk factors and stressors. The control intervention was educational and contained practical advice on how to deal with some of the main stressors identified in the qualitative study and the web survey. Table 4.1 shows an overview of both interventions and their modules.

Table 4.1: Overview of interventions and modules

Intervention	Modules	Online title
Trait-focused	Introduction	Introduction
	Perfectionism	When failure is not an option - how to succeed at university without being trapped by perfectionism
	Self-esteem	I am awesome - how to feel better about yourself
	Anxiety and worry	Don't panic - dealing with anxiety and worry.
	Dealing with difficult emotions	The emotional rollercoaster? - dealing with the highs and lows of students living
Control	Accommodation	Accommodation
	Finances	Finances
	Time-management and study skills	Time-management

Each intervention contained several modules, which could be completed independently. An exception was the Introduction module in the trait-focused intervention, where it was suggested that students complete the module prior to starting with any other module in this intervention. To increase the appeal of modules in the trait-focused intervention, different titles (as shown in Table 4.1) were chosen to represent the modules online.

The first study of this thesis investigated the occurrence of mental health problems in students and associated personality risk factors (Chapter 2). In this study a cluster analysis was performed to identify clusters of different symptomatologies within students. Contrary to the hypothesis, however, only two different clusters emerged in this analysis. Students in the larger cluster (*n*=185, 77.4 per cent) reported lower levels of anxiety and depression, fewer drinking problems, higher self-esteem and quality of life than students in the smaller cluster (*n*=54, 22.6 per cent). Students in the latter cluster were classified as at high risk for developing mental health problems. Compared to students at low risk, students at high risk reported higher levels of perfectionism, neuroticism, lower extraversion and conscientiousness as well as higher levels of anxiety sensitivity and impulsivity. As a result, it was argued that an intervention targeting vulnerability for common mental health problems in students should incorporate components for anxiety and depression, self-esteem, worry, perfectionism and emotion

regulation. In addition, findings from Chapter 3 of this thesis suggested that the risk for developing mental health problems is not associated with academic or practical challenges, although these were the challenges most commonly identified by students themselves. However, students at high risk for developing mental health problems were more likely to report emotional challenges, such as loneliness, anxiety or post-traumatic stress, in the web-survey emphasizing the need for effective emotional coping strategies for such students. To address these issues, five modules for the personality risk factor intervention were proposed and drafted: (1) Introduction; (2) Perfectionism; (3) Low Self-Esteem; (4) Anxiety and Worry and (5) Dealing with Difficult Emotions.

In the focus groups and the web-based survey, students indicated that they experienced housing issues as challenges of student living. Amongst practical challenges of student life identified in the focus groups were financial difficulties and close to a quarter of students reported being affected by some sort of money issues. For that reason, a module with housing advice and a module with finance advice was included in the control intervention. Amongst academic challenges identified in the focus groups and web survey were problems with managing the academic workload, getting used to new learning methods at university, time management and course-related challenges. Hence, a module titled "Time management" was included in the control intervention trying to address most of the issues above.

With regard to the vulnerability-stress model presented in the Introduction of this thesis, it becomes apparent that the trait-focused intervention targets personality risk factors and the interaction of these risk factors with stressors. The control intervention on the other hand only targets self-perceived stressors (see Figure 4.3). In addition, the trait-focused intervention is a cognitive-behavioural intervention, whereas the control intervention is a practical and educational intervention not based on a therapeutic model.

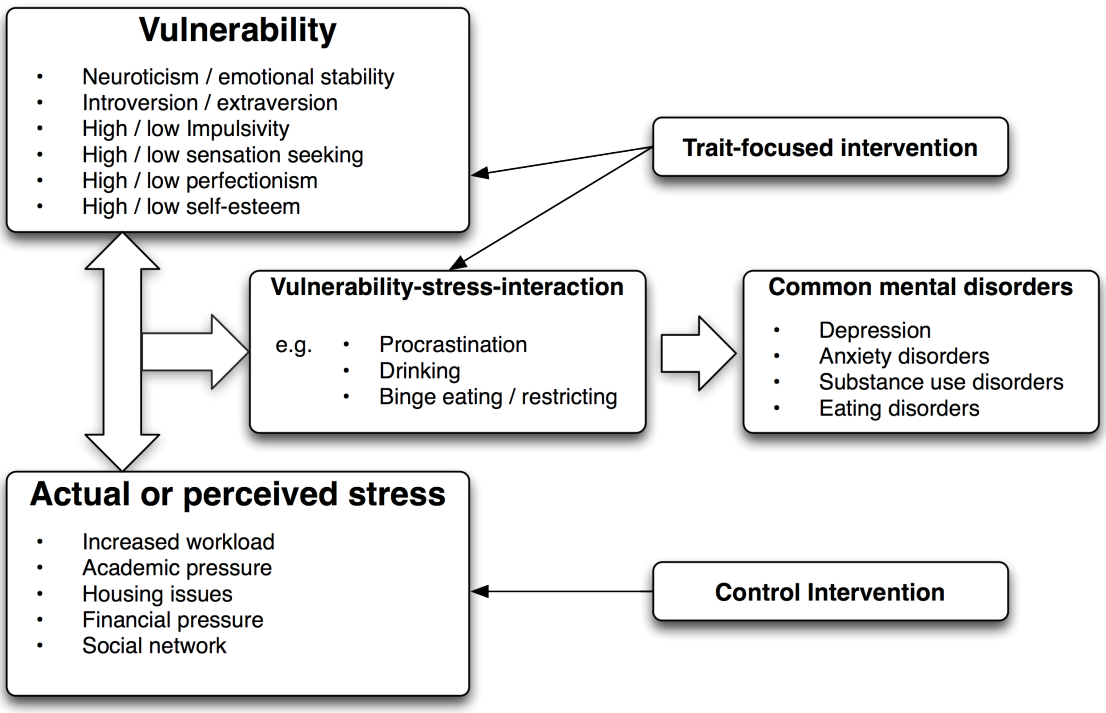

Figure 4.3: The prevention intervention in the context of the vulnerability-stress model

All modules are primarily text-based and contain some images to illustrate facts or improve the appeal of the module. Although the use of multimedia, such as audio clips, animations or video was initially planned, this could not be realised due to financial and time constraints. However, this made hard- and software requirements for the intervention minimal, allowing students to access the website with older computers or other devices (e.g. netbooks, smartphones). Intervention content is organised into multiple pages to increase readability and appeal. Hence, students would not have to scroll through the entire text of a module, but could navigate back and forth through a number of slides (see Figure 4.4). In addition, this made it possible to determine whether students completed a module. If they reached the final slide, the module was considered completed. In their profile, students could see which modules they had available, started or completed. Students had the option to revisit completed modules.

For all modules, the Flesch Reading Ease and the Flesch–Kincaid Grade Level as objective indicators of the readability were obtained. Higher scores on the Flesch Reading Ease indicate greater readability and the Flesch–Kincaid Grade Level indicates the minimum school grade level required to understand a text and lower scores indicate greater readability. The Flesch Reading Ease score for the modules varied between 58.9

and 65.9, and the Flesch–Kincaid Grade levels were 8.1 to 9.1, indicating that all modules were easily comprehensible. Considering the high proportion of foreign students at university, this assured that all students should have been able to understand the materials.

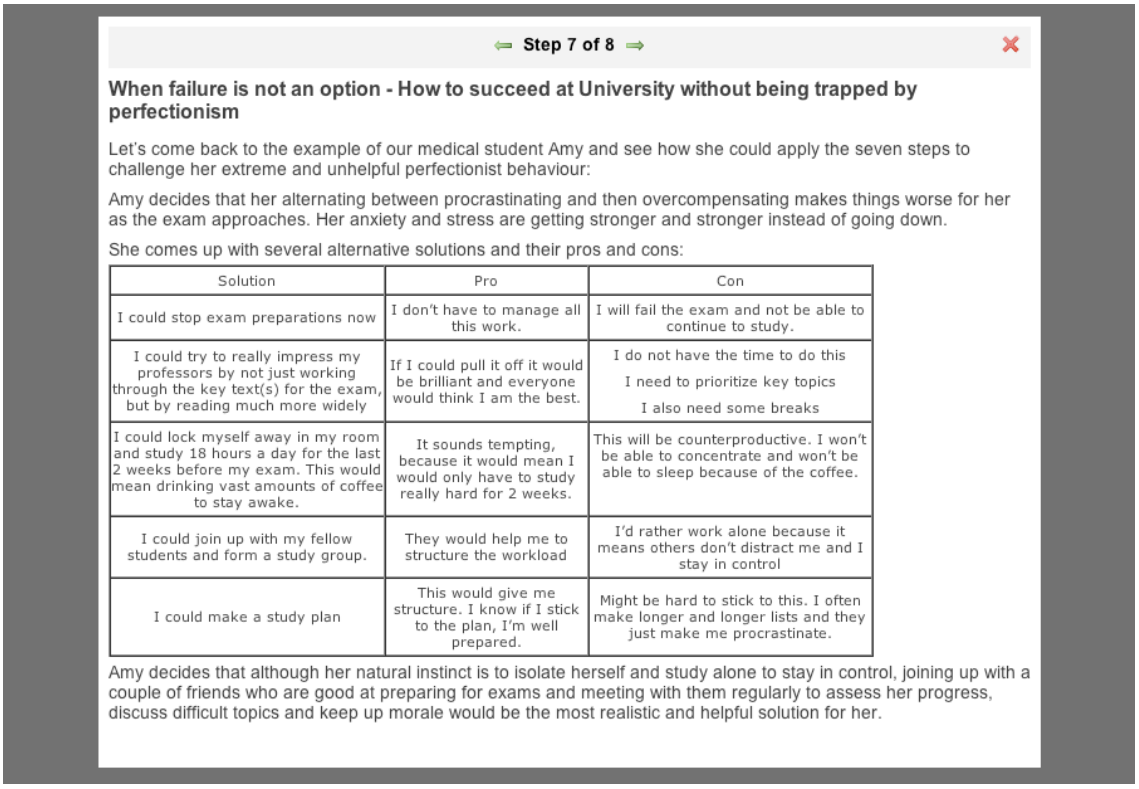

Figure 4.4: Screenshot of a module slide

4.4 Trait-focused intervention

The following section outlines the content of each module of the trait-focused intervention and which evidence-based self-help material was used in the development. The complete modules are included in the appendix of this thesis (Appendix E & Appendix F).

4.4.1 Introductory module

Given that many self-help interventions and materials for mental disorders common in students are based on a cognitive-behavioural model and the good compatibility of CBT with models of adult learning, it was decided that the intervention should follow a cognitive-behavioural approach. For all targeted disorders (i.e. depression, anxiety, substance abuse and eating disorders), there is a solid evidence base for the efficacy of

CBT-based treatments and self-help. In addition, CBT provides a framework that can be easily adapted to each intervention component.

An introductory module was designed to familiarise students with basic CBT concepts. The module started with a brief description of a model based on the five-areas assessment model by Christopher Williams and Anne Garland (2002). The authors note that "the model aims to communicate fundamental CBT principles and key clinical interventions in a clear language" and that it "is not a new CBT approach; rather, it is a new way of communicating the existing evidence-based CBT approach for use in a non-psychotherapy setting" (Williams & Garland, 2002, p. 174). Figure 4.5 shows the model used in the online modules. Different to the model described by Williams and Garland, the model used in the present intervention takes idiosyncratic factors such as personality factors into consideration.

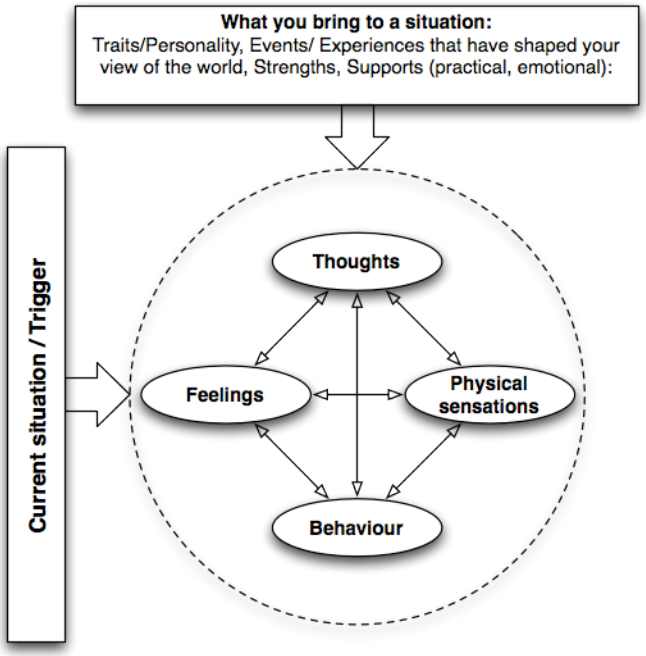

Figure 4.5: The cognitive-behavioural model used in the intervention (adapted from Williams, 2002)

This model illustrated how in any given situation thoughts, feelings, behaviour and body are related, and how they are affected by external triggers and by what the individual brings to the situation.

In this module, the main learning objective for students was to understand how thoughts, feelings, physical sensations and behaviour are connected with each other and

that individuals respond to problems with helpful or unhelpful behaviour. The introductory module served as a foundation for the following modules and concepts such as the five-areas assessment model, helpful and unhelpful behaviour were used throughout the models to illustrate facts or facilitate change.

4.4.2 Perfectionism module

Two popular self-help books on perfectionism were consulted in the design of this module. The first book was "When Perfect Isn't Good Enough" by Antony and Swinson (1998), which is a self-help book based on CBT principles and has been empirically investigated in randomised controlled trials. Pleva and Wade (2007) randomised people experiencing problems with perfectionism to either a pure self-help group, in which only the book was given to participants, or a guided-self-help group, which included eight weekly session in addition to the book. After the intervention and at follow-up, both groups showed reduced perfectionism. Although a larger effect was observed in the guided self-help group, the authors concluded that this was due to the increased amount of treatment received. The second self-help book used was "Overcoming Perfectionism" by Shafran, Egan, and Wade (2010). Although no trial has yet been published demonstrating the efficacy of the book itself, it is based on a CBT treatment for perfectionism, which has been investigated in an RCT and demonstrated effectiveness (Riley, Lee, Cooper, Fairburn, & Shafran, 2007).

The aim of the module was to introduce students to the concept of perfectionism, how perfectionism affects different areas of life and can manifest itself in a range of helpful and unhelpful behaviours. In addition the module sought to provide students with a set of skills to address and overcome unhelpful cycles of perfectionist thinking and behaviour.

At the start of the module, students received a brief definition of perfectionism and a description of how individuals with high perfectionism differ from people with low perfectionism. The module emphasised that perfectionism can have positive and negative consequences and used a table of pros and cons of perfectionism to encourage students to think of positive and negative aspects of perfectionism in their own life. The main section of the perfectionism module focused on how perfectionism can result in unhelpful thinking biases, such as black-or-white thinking, filtering, mind-reading,

catastrophic thinking or self-criticism, and unhelpful perfectionist behaviours, such as giving up too soon, procrastination, trying to overcompensate, excessive checking and reassurance seeking, repeating and correcting, not knowing when to stop, excessive organising, or slowness. With reference to the introductory module, this was considered in the context of the five-areas assessment model. In an example of a female medical student, who struggles to get started preparing for her exam, this connection between perfectionistic thinking, behaviour, physical sensations (e.g. sleep, appetite) and feelings was emphasised. The last section of the modules focused on a seven-step strategy to challenge perfectionism. Based on techniques described in "When perfect isn't good enough", the strategy aimed to help students to identify perfectionist behaviour, finding and evaluating alternative solutions and carrying them out. A student example illustrated the practical use of this strategy.

Attention was paid in the development of this module to ensure that it was relevant to students and student life as well as to integrate the material into the CBT framework provided in the introductory module.

4.4.3 Self-esteem module

The content from this module was primarily developed using ideas from the popular self-help book "Overcoming Low Self-Esteem" by Melanie Fennel (2009). Studies exist that investigated the efficacy of a CBT treatment based on the book. In an uncontrolled study, 72 individuals received ten sessions of weekly group therapy. After treatment and at follow-up, self-esteem was significantly improved (Rigby & Waite, 2007). Similar results were observed in an eight-week group therapy programme for women with low self-esteem (Morton, Roach, Reid, & Stewart, 2011).

The aim of this module was to introduce students to a model of conceptualising different sources of self-esteem relevant to their own lives and to teach them skills on how to strengthen self-esteem.

The module started with a brief description of what comprises self-esteem and an illustration of different sources of self-esteem. This was achieved through a model of a self-esteem house as depicted in Figure 4.6.

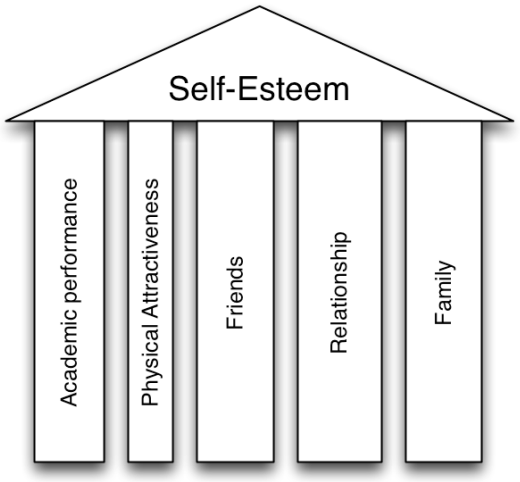

Figure 4.6: The self-esteem house (adapted from Potreck-Rose & Jacob, 2010)

In this model, adapted from a German self-help book on self-esteem by Potreck-Rose and Jacob (2010), self-esteem can have several sources, such as friends, family, leisure activities or academic achievements. The more sources (or pillars of self-esteem) there are, the more stable the self-esteem house. Each source or pillar can also be considered in terms of its own size/strength compared to other sources. Students were encouraged to think about their own sources of self-esteem and design their own self-esteem house.

The next section of this module focused on how self-esteem (particularly low self-esteem) affects the five areas discussed in the introduction module. Three examples of fictional students were introduced to illustrate these associations. Each example was accompanied by a graphic showing the cycle of unhelpful behaviour each person engages in. The aim of the examples was to demonstrate that low self-esteem can affect all areas of life. In this module, the resources provided were divided into three sections: self-esteem and excessive self-criticism, self-esteem and acceptance, and self-esteem and communication.

The first section explained the role of excessive self-criticism and how it can turn into a constant inner negative commentary on all actions (including very minor behaviours), which often involves negative judgements about the individual followed by a writing exercise to improve self-esteem. This writing exercise was adapted from Maudsley Model for Individual Treatment of Anorexia Nervosa (Treasure et al., 2009) and designed for students to develop a balanced, fair and kind understanding of themselves

instead of being harsh or critical. In this exercise, students were asked to write about a recent event from different perspectives.

With regard to the self-esteem house introduced at the beginning of the module, the second section of the module focused on the relationship between self-esteem and acceptance. Students were encouraged to review their sources of self-esteem and think about their positive qualities by producing a list with things they like about themselves (e.g. achievements, challenges they have had to face in their lives, gifts or talents, qualities friends and family admire in them) and recording their positive aspects on a daily basis. It was suggested that they use a plain notebook to write down positive things about them immediately when noticing them. Both tasks were adapted from "Overcoming Low Self-esteem" (Fennell, 2009).

In the final section of the self-esteem module, students could learn more about the relationship between self-esteem and communication. The beginning of the section broached the issues of different communication styles including a submissive or passive style of communication, an aggressive communicative style and an assertive style. This module aimed to provide students with skills of assertive communication to help them communicating their needs and was based on parts of "Living Life to the Full", an online self-help course by Chris Williams (2008).

4.4.4 Anxiety and worry module

Parts of this module were based on the self-help books "Overcoming Anxiety" (Kennerley, 2006) and "The Worry Cure" (Leahy, 2005).

The aim of this module was to introduce students to the concept of anxiety and worry and the impact of anxiety and worry on thoughts and behaviour. In addition it sought to provide students with cognitive-behavioural techniques for reducing worry and anxiety.

In the beginning of the module, the role of anxiety was explained along with the consequences of anxiety on cognitions, feelings and the body, with reference to the five-areas assessment model introduced in the introduction module. A graphic explained how anxiety could affect different parts of the body. The influence of personality and temperament on anxiety was briefly outlined and how they can contribute to individuals

reacting to minor or ambiguous threats with worry. Content in this section was informed by "Overcoming Anxiety" (Kennerley, 2006).

Worry was addressed in the next section of the module. It started with a description of worry and a distinction between worry and rumination and described how excessive worry is an unhelpful behaviour. Considering that many students worry about their performance in exams, two examples were provided of students handling their exam-related worry. Students could read about ten unhelpful strategies of dealing with worry and assess whether any of these applied to themselves. Information on worry and unhelpful strategies for dealing with worry were adapted from "The Worry Cure" by Leahy (2005)

Students were then introduced to a three-step approach for reducing worry. The idea behind this three-step approach was to point out that worrying about something is not wrong per se, but that unproductive worry can be challenged with cognitive-behavioural methods. By writing down when students were worried about something and focusing on the aspects of the five-areas assessment model when writing them down, i.e. thoughts, feelings and behaviour, students were asked to create a worry diary. This helped students identifying times when they worry more, feelings they commonly experience before worrying and unhelpful behaviours they might engage in when they worry. The second step involved identifying productive and unproductive worry. Students were encouraged to evaluate their worries according to whether they are plausible and reasonable, whether something can be done about the problem immediately and whether the student can move away from worrying to find solutions to the problem. Worry is only considered productive if all three criteria are met. Finally, students learned five techniques for dealing with worry, including: postponing worries, distraction, dealing with uncertainty, gaining a more realistic perspective, and mindfulness. Postponing worry is a simple technique to gain more control over when one is worried and can help students identifying their worries more easily. As a short-term solution to reducing worry, students can use distraction such as interesting and demanding physical or mental exercises. With regard to dealing with uncertainty, students learned how to examine pros and cons of uncertainty and embrace uncertainty as something positive and exciting. These three techniques were adapted from "The

Worry Cure" (Leahy, 2005). In the technique for gaining a more realistic perspective students were asked to write down a worst-case scenario, a best-case scenario and finally a realistic scenario for a chosen worry. This technique is known as decatastrophising and was adapted from the popular "Learned Optimism" self-help book series by Seligman (1995). The last technique for dealing with worry in this module was mindfulness and included a simple mindfulness exercise to help students focus on the present instead of ruminating about the past or worrying about the future.

4.4.5 Module on dealing with difficult emotions

Content in this module was derived from the "Maudsley Model for Individual Treatment of Anorexia Nervosa" (Treasure et al., 2009), a CBT-based treatment workbook for patients with anorexia. As many sufferers from anorexia have difficulties with recognising and dealing with emotions, the manual has a strong focus on emotion processing and regulations. In an unpublished pilot study in which the model was compared to another non-CBT treatment, both approaches produced promising results.

In this module of the targeted intervention, coping strategies for difficult emotions were discussed. The aim of this model was to provide students with an overview of the functions of emotions and how emotions can affect behaviour in a negative way, how to deal with difficult emotions and embrace positive emotions.

With reference to the five-areas assessment model, the module started with an example of how an emotion such as sadness affects thoughts, physical sensations and behaviour. A brief section explained the processing of emotions with a slow route and a fast route, and the importance of emotions as an evolutionary mechanism. Students were encouraged to think about the functionality of emotions such as anger, sadness, shame and jealousy. After that, students learned that emotions can be troubling in three ways: (1) experiencing too little or too much emotion; (2) the inability to read emotions in others and; (3) the ability to express emotions. It was outlined that having difficulties in one of these areas is often associated with unhelpful behaviours for dealing with emotions, with a reference being made to binge-eating or restricted eating and the use of alcohol and drugs. The second part of the module focused on strategies for dealing with difficult emotions. It was emphasised that experiencing emotions is a vital part of life and that suppressing emotions is not a helpful strategy for dealing with them.

Students were encouraged to try recognising their emotions, recognise unhelpful behaviours associated with these emotions and use helpful behaviours instead. Improved awareness of emotion can be achieved with a simple writing exercise. Students were asked to write about a situation and focus on the emotions they experienced. A link to a list of emotion words was provided to facilitate this. In addition, they were asked to note their response to the situation and how their behaviour affected the intensity of the emotion or emotions. Finally, students were encouraged to think about whether their behaviour was helpful or not. It was suggested to do this recording of emotions in writing for one week to identify possible patterns of unhelpful behaviour and needs that arise from experiencing certain emotions. A list of helpful behaviours such as exercise, sleep hygiene, talking to someone or therapeutic writing was provided alongside with detailed instructions on the rational of these behaviours and tips how to realise them.

The final section of the module focused on embracing positive emotions. Based the self-help book "Authentic Happiness" by Martin Seligman (2011), two techniques for embracing positive emotions were introduced. The first technique involved recording situations and moments that went well for one week, whereas the second technique was a gratitude visit in which students were suggested to write a short letter of gratitude to a person that has had a positive influence in their life and read the letter aloud to this person.

4.5 Control Intervention

As the content of modules in the control intervention primarily targeted everyday hassles, it was not based on cognitive-behavioural self-help resources. Instead the modules were compiled using internet resources on accommodation, finance and time management, as well as student information material provided by universities or student organisations. Similar to the development of the trait-focused intervention, drafts of the modules were given to students and experts to get feedback on readability, creditability and usefulness of the module content. The complete modules are included in the appendix of this thesis.

4.5.1 Accommodation tips module

In this module, students received helpful information on different options for student housing, related costs and on how to find accommodation. The module started with a list of different options for student accommodation such as halls of residence, flat shares or private accommodation and the pros and cons of each type. In the next section, students learned about additional costs associated with students living such as utility bills, internet, TV license, council tax and insurance and how they could minimise the costs. After that, students received tips on how to find accommodation. Students were encouraged to think about their maximum budget, the area they wanted to live in, transport to university and whether they wanted to share with someone else or not. The pros and cons of sharing accommodation with others were outlined and links to property search websites were provided. Students were advised to thoroughly familiarise themselves with an area and meet all potential housemates prior to moving in. Additional costs of renting a flat or house through a letting agent were explained. A separate section explained deposits and inventories. Finally, a moving checklist was provided with issues, students should address before moving into new accommodation.

4.5.2 Money saving tips module

The module sought to provide students with helpful information on how to save money and manage their finances. Students were advised to create a spreadsheet summarising their spending and income to get an overview of their financial situation. To facilitate this process they were encouraged not to use their credit or debit card and instead withdraw money and keep the receipt. Once students had an overview over their financial situation, it was suggested that they determine the costs for the categories accommodation, tuition fees, essential amenities and expenses such as food and utilities, costs related to study and non-essential expenses (such as going out). As the main saving potential is usually amongst the essential and non-essential expenses, students were given detailed advice on how to save money on transport, utility bills, telephone and internet, study-related costs, food, books, recreation and credit cards. In addition, the pros and cons of taking up a student job were discussed. The module ended with a summary of the advice given.

4.5.3 Time management and study skills module

The learning objectives of this module were to learn how to manage time effectively, set priorities and goals, learn how to overcome procrastination and work effectively with academic texts. As a first step to achieve these objectives, the module asked students to write about their goals for the current month, the year and the next two years. It was emphasised that for those goals to be realised, setting realistic goals is essential and how unrealistic goals can cause frustration and lead to procrastination. In a next step, students were instructed to break down each goal into smaller units until these units become manageable tasks. The next section focused on strategies for managing time and started with a time tracking task to establish a baseline on how the students spend their time. They were advised to use an organiser to write down how they have spent their time for each hour of the day. In addition, they could compare the time planned for an activity with the actual time it took to complete it and categorise activities. In this task, students were assumed to identify discrepancies between planning and execution of activities as well as identify areas for improvement. The modules continued with strategies for improving time management at university, including setting time aside for reviewing lectures, leaving time for enjoyable activities and deviations from the schedule, focusing on the moment instead of focusing on the day or week, using time between activities (such as on the bus) and scheduling enough time for essentials (e.g. shopping, laundry). The module emphasised that for managing time effectively, it is important to have an organised and clean working environment. Tips on how to organise files, folders, stationary and digital data were provided. A section on procrastination provided hints on how to overcome procrastination, such as scheduling time, breaking up projects into more manageable tasks or rewarding oneself for completing tasks. To help students with reading academic texts, a popular reading technique was introduced called the SQ3R technique. SQ3R stands for Survey, Question, Read, Recite and Review. A summary at the end of the module summarised the advice on time management.

4.5.4 Summary

This section described the development and content of an internet-based trait-focused intervention targeting common mental disorders in students. In accordance with the MRC guidance on the development of complex health intervention, the modules

incorporated evidence based techniques and were developed together with experts and users. The trait-focused intervention was based on a cognitive behavioural approach and contained interactive elements to encourage students to work on their problems.

The MRC guidance further suggests the development of an active control intervention. To create a credible active control intervention, the modules addressed issues that were identified by students in the previous study (see Chapter 3). In contrast to the trait-focused intervention, the content of the control intervention was not based on a theoretical treatment model and contained no interactive elements.

A second important component of complex health intervention is personalised feedback. The next section outlines how computerised personalised feedback can be developed for complex health interventions and how the principles were applied in the feedback developed for the intervention in this thesis.

4.6 Computerised personalised feedback in e-health

In addition to the intervention content targeting vulnerability factors or stressor, feedback on risk factors and behaviour was considered an important intervention component to be included.

Feedback in its broadest sense is a vital part of human interaction and includes responses to another person's message. This may simply involve paraphrasing what the person said, a principle used systematically in a therapeutic context by Rogerian therapy (Rogers, 1951). Early e-health applications, such as the therapy computer programme ELIZA, used this principle (Proudfoot, 2004). More recent generations of e-mental health programmes rest on a much more narrow and specific definition of feedback, namely the provision of verbal, written or graphically displayed information to a person about aspects of their behaviour, health or risk of developing ill health, based on their personal characteristics ascertained through some form of assessment and in the context of disease prevention or management.

Amongst the many advantages of e-(electronic) health applications and more recently m-health (mobile computing and communication) technologies in diagnosis, disease prevention and management are their convenience, anonymity and low costs and for the

latter that they are portable and support multimedia software applications (Free et al., 2010). Online-self-assessment can be rapidly followed by (automated) feedback.

Different taxonomies for feedback types exist (e.g. Kreuter, Strecher, & Glassman, 1999), but are used inconsistently. Here, I use the classification suggested by DiClemente, Marinilli, Singh and Bellino (2001) who identify three basic types of feedback: generic, targeted and personalised. Generic feedback includes information that is relevant for a population to which the individual receiving feedback may or may not belong. Targeted feedback addresses a particular population, such as those of a certain age or ethnicity or who have a particular risk factor/set of risk factors. The information is based on this high-risk population, but not on the assessment of an individual. Personalised feedback contains individual information based on some type of assessment. The degree of individualisation increases from generic to personalised feedback and advances in technology make it easier to provide personalised feedback in e- and m-health applications. For example, in an aftercare study of patients with Bulimia Nervosa, the frequency of bingeing and purging behaviour was significantly reduced through the use of personalised text-messages (Shapiro et al., 2010).

Within personalised feedback different data sources for comparison can be identified. In ipsative feedback a parameter is assessed repeatedly and changes are fed back to the individual. In "Living Life to the Full", an online-based intervention for depression, users can rate their mood and view a graph displaying their mood over time (Williams, 2008). Normative feedback describes feedback in which the individuals receive information about their own performance in comparison with a reference group. Normative feedback delivered via the internet has successfully been used to prevent alcohol abuse (Neighbors, Lee, Lewis, Fossos, & Walter, 2009). A special subtype of personalised feedback is summative feedback in which the results of an assessment are summarised and fed back to the individual without comparing them to any other data source. In general, personalised feedback seems to be superior to generic or targeted feedback approaches (Prochaska, DiClemente, Velicer, & Rossi, 1993). This section aims to discuss different challenges and options of creating personalised feedback for e- and m-mental health applications.

4.6.1 Mechanisms of action of feedback in e- and m-mental-health applications

A number of possible mechanisms of action have been identified for feedback intervention in health care or behaviour change settings, such as: providing information on risk or protective factors; social comparison; motivating for change or engaging the recipient; changing attitudes regarding certain beliefs or providing support. Yet, there is little evidence supporting any of the suggested mechanisms (DiClemente et al., 2001).

One of the theories providing a framework for the efficacy of feedback in health applications is the Elaboration Likelihood Model. The theory postulates two pathways (or strategies) of information processing: a central route and a peripheral route. Information processed via the central route is more likely to be scrutinised towards its content, whereas information processed via the peripheral route is judged based on more peripheral cues. The personal relevance of a message increases the motivation for deeper processing (central route). Thus, tailoring information to the recipient, as can be done with personalised feedback, increases the likelihood for deeper processing (Petty & Cacioppo, 1986). Accordingly, it has been demonstrated that very simple measures, such as simply addressing feedback recipients by their first name, can sufficiently personalise the message (Dijkstra, 2005).

The social norming approach in the literature on high-risk drinking suggests that people overestimate the alcohol consumption of others. In studies with university students, it was possible to drastically reduce drinking levels by providing students with the information that they overestimate the drinking levels of others (normative feedback) and underestimate their own drinking (Perkins & Craig, 2006).

Cognitive theories emphasize the information component of feedback that helps the recipients to question or modify their knowledge or behaviour, particularly in case of a mistake (Kulhavy, 1977).

Personalised feedback also plays an important role in motivational interviewing, a "collaborative, person-centred form of guiding to elicit and strengthen motivation for change" developed in the context of addictions (Miller & Rollnick, 2002, p. 137). In this context personalised feedback is used to develop discrepancy between where

individuals are now and where they want to be with regard to problematic health behaviours.

In summary, most of the theoretical models on the efficacy of feedback focus on the motivational and learning aspects of personalised feedback, i.e. feedback increases the likelihood or depth of processing information or modifies knowledge or behaviour. When it comes to the use of feedback in promoting healthy behaviour or reducing unhelpful behaviour, little is known about the effects of feedback on learning and behavioural change, particularly as feedback in cognitive-behavioural e- or m-health programmes often only forms one of multiple treatment components.

4.6.2 Challenges and recommendations for personalised feedback in e-mental health

Feedback generation and timing

Prior to the use of computerised interventions, personalised feedback would have been created by a health care professional and then given to the recipient. Thus, one of the challenges of developing e-mental health interventions is to develop feedback strategies that can be fully generated and delivered by the applications themselves. E-mental health programmes can include a number of different assessments each of which potentially offers the opportunity for feedback. Furthermore, different feedback messages have to be created for different outcomes. When developing feedback in e-health applications, a decision has to be made as to whether separate feedback is given for each assessment or whether feedback takes the results of several assessments into consideration. The latter case offers more comprehensive feedback, but involves more work in the feedback development, as messages for every possible combination of outcomes have to be created. Hence, for large-scale interventions with higher complexity, it is useful to include feedback that can be entirely generated by the computerised intervention, based on the participants' responses. This can be achieved by, for example, generating predefined text snippets for different outcomes, which can be combined to a more comprehensive feedback by the application. A hybrid approach is possible in which all potential feedback messages are created by a computer and then edited to remove redundancies, create alternative wordings or improve communication style. In any case, feedback should be developed prior to delivering the intervention to allow for immediate feedback, as any delay between assessment and feedback reduces its

efficacy (Gibson, 2000). If a user is asked to complete a number of assessments, it may be useful to provide summative feedback after each test. However, it is still possible to provide a more elaborate (ipsative or normative) or integrative feedback (e.g. feedback that takes different assessments into consideration) after the completion of all assessments.

Language and cultural context

Personalised feedback should not only be based on some type of assessment, but feedback messages need to be tailored to demographic (age, sex and education level), motivational (readiness and ability to change) and cultural characteristics of the recipient. This is illustrated by two small studies testing a relapse prevention programme for patients with Bulimia Nervosa using personalised text messages. This had promising results in Germany (Bauer, Percevic, Okon, Meermann, & Kordy, 2003), whereas in a UK-based study using an English translation of the messages, acceptability and efficacy were much lower (Robinson et al., 2006).

Psychometric issues

Feedback or clinical decisions are often based on the results of questionnaires and standardised tests. In clinical practice it is not uncommon to report or to feed back the exact test scores to the patients, for example, to illustrate the necessity of certain treatments or to review the patient's therapeutic progress. However, from a psychometric perspective, the use of test scores in this way is highly problematic and inadvisable. Classical test theory suggests, that the true score of a person's ability or characteristic is composed of the test score and an error term. Therefore, test scores are always affected by a measurement error and do not reflect a person's true score of ability or characteristic.

One reason for the described misuse of test scores in clinical practice may lie in the fact that there are only very few English publications describing comprehensive analysis procedures for psychometric single case assessments (e.g. Willmes, 1985). Furthermore, there is a lack of tools or software for clinicians that would facilitate this process. Thus, it is not surprising that the use of statistically adequate procedures is rarely seen in clinical practice. For this reason, I present a simple and for practical purposes adequate analysis procedure for psychometric single case assessments which was described by

Huber (1973) and developed further by Westhoff and Kluck (2008). The procedure can be easily applied to any test, if information on reliability coefficients, scale means and standard deviations and information about sample size and characteristics are available.

Reliability coefficients describe the accuracy with which tests measure certain abilities and characteristics. For generalised explanation or prediction of behaviour over time a test-retest reliability coefficient offers appropriate accuracy estimation for further analysis. If information about the assessed construct only at the time of the measurement is of interest, parallel forms of reliability coefficients or internal consistency indices can be used.

4.6.3 Normative feedback

A simple three-step procedure for normative feedback on standardised tests can be applied. In a first step, the accuracy of reliability estimators of a test has to be examined. According to Huber (1973) reliability coefficients obtained with a sample larger than 400 can be considered as essentially invariant; thus, further single case analysis can be carried out for the concerned test parameter. In any other case, the 95% confidence interval of the reliability score has to be calculated. The analysis of the test score should only be carried out if the reliability of the test is essentially invariant or practically invariant, that is, if its confidence interval is smaller than 0.1. For most standardised tests, reliability coefficients are either essentially invariant or practically invariant.

The second step of the analysis procedure involves calculating the 90% confidence interval for the individual's test score using information about appropriate reliability and standard deviations for the scale concerned from a comparable norm group (e.g. similar age group, patient population).

In a third step, the confidence interval is compared against the mean and the standard deviation of the norm group used to create a meaningful verbal comparison of the individual's performance against a comparable group. The confidence interval provides a range in which the individual's score most likely falls and Westhoff and Kluck (2008) suggest classifying both borders between below average, average and above average (see Figure 4.7).

The procedure described for psychometric single case assessments offers a simple way for giving statistically supported normative feedback in e- and m-health applications, which can be easily implemented and interpreted by the user. Figure 4.7 shows a summary of the suggested procedure. If a large number of individuals are compared against the same norm, cutoff values can be computed for each of the five classifications, allowing an easier implementation into computerised feedback applications. The three steps can also be applied in traditional clinical settings, for example to compare an individual's test scores against norm data of a community or patient population. To facilitate the proposed procedure DiagnosticCalc, a freeware tool for Windows and Mac OS X, is available in German and English under www.diagnosticcalc.com (Hoffmann & Musiat, 2011).

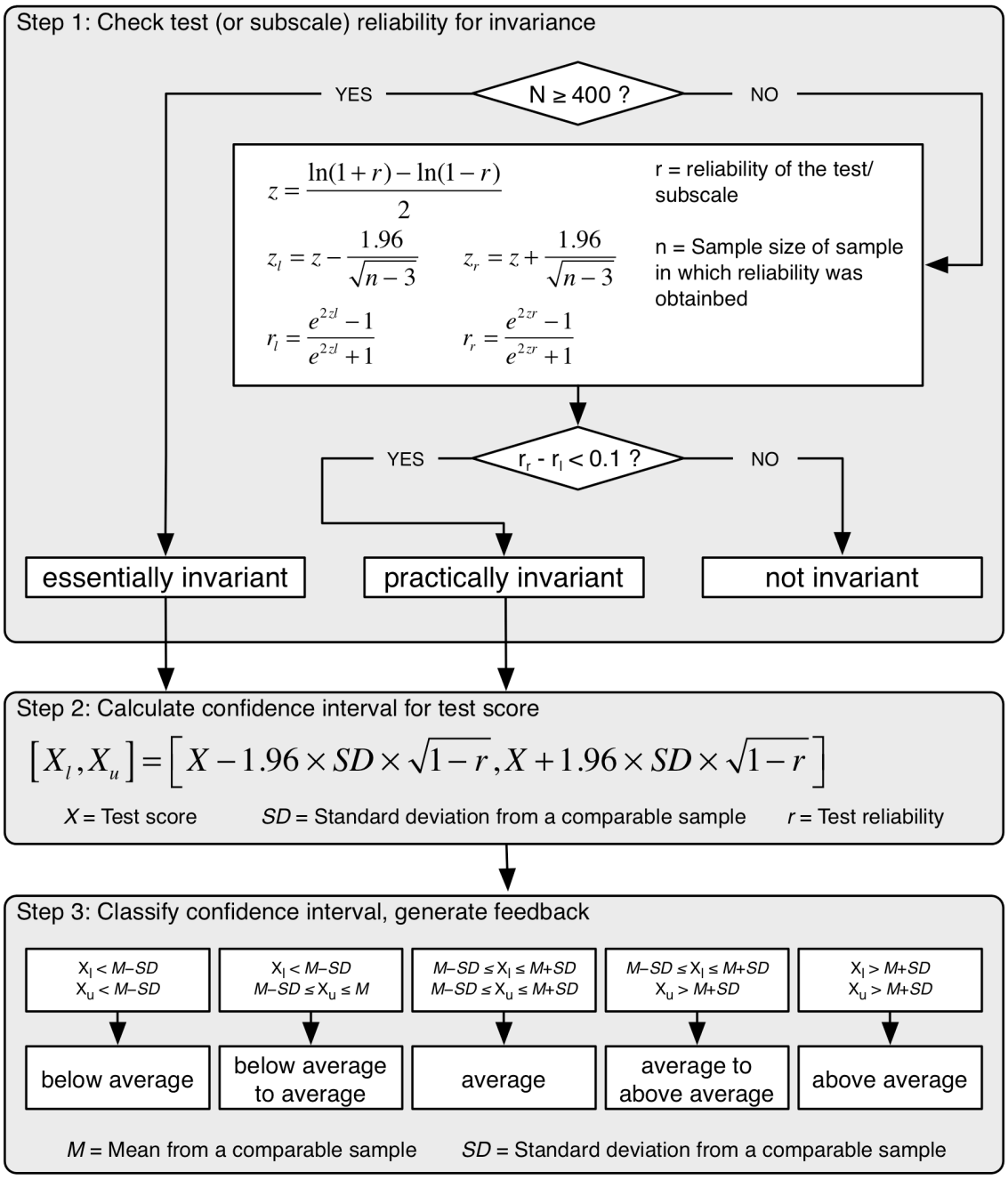

Figure 4.7: Recommended three-step procedure for normative feedback

The use of normative feedback is suggested primarily for attributes that can be modified by the user, including behavioural frequencies (e.g. "Compared with other women of your age, your exercise level is below average to average") and attributes resulting from particular behaviours (e.g. "Compared to other men of your age, your cholesterol levels are above average"). Feedback on non-changeable attributes (e.g. personality) should only be normative, if they highlight risk, or if the feedback aims to modify the recipient's beliefs about his or her performance.

4.6.4 Summative feedback

The simplest way of providing personalised feedback is to summarise the participant's responses. For behavioural frequencies, such as cigarettes smoked per week, number of panic attacks or frequency of binges, this can be done, for example, graphically by plotting scores in a diagram to visualise changes over time. Alternatively, frequency ranges could be defined into which the provided frequencies can be classified.

Although the reliability issues discussed above similarly apply to self-reported behavioural frequencies, using them in feedback is less of an issue, as the information is provided by the user. An increase or decrease in behaviour can offer an opportunity to discuss the circumstances that led to the behaviour (see ipsative feedback).

However, to increase the information value of the feedback, it is suggested to transform the information from the assessment into more meaningful and specific information. For example, the amount of beer, spirits, wine consumed etc. could be transformed into the commonly used alcohol units to allow users to assess their drinking behaviour. The transformed information may also allow a comparison to norms from a comparable sample (see normative feedback).

As previously discussed, in most cases feedback on standardised measures, such as questionnaires or scales, should not contain individual scores. Although some measures provide cutoff values (e.g. BDI, PHQ9, GAD7) with diagnostic classifications, it is not recommended to provide a score and/or the suggested classification. Instead, a summary of the responses could be provided, to avoid labelling. It is suggested that in the development of the feedback, each subscale of the questionnaire (if applicable) is divided into score ranges and a standardised verbal summary of the responses for each range is created. For each subscale individual feedback can be given. Feedback on individual items can be provided, if they assess very essential information or highlight a particular risk. For example, if the user indicates commonly having suicidal thoughts on the last item of the PHQ9 (Kroenke et al., 2001), the system could suggest seeking professional advice, provide contact details to helplines or alert a system administrator.

Summative feedback may seem to have only little informative value, as it only summarises information the individual has provided anyway. In comprehensive e-

mental health applications, addressing multiple aspects of mental health over longer time periods, summative feedback may help the user to organise information more easily, especially when used in conjunction with normative or ipsative feedback.

4.6.5 Ipsative feedback

Providing ipsative feedback is useful in more long-term e-health applications (e.g. Overcoming Bulimia, Williams, Aubin, Cottrell, & Harkin, 1998), in which the user is working towards changing certain behaviours or aspects of the self.

There has been a controversy in the literature about the definition of clinically significant change. Whereas it is relatively easy to estimate whether an observed change in a group or an individual is statistically meaningful, it remains unclear to what extent that change describes a clinically significant improvement or decline. Particularly in mental health, there is often an overlap between clinical populations and those considered normal (Evans, Margison, & Barkham, 1998), making the decision more difficult.

Jacobson and Truax (1991) have proposed a method to determine both: reliable change and clinically significant change. As outlined above, reliable change indicates whether an observed change in a measurement can be attributed to errors in the measurement procedure or to a change in the measured attribute. Clinically significant change describes whether the observed change constitutes a meaningful clinical outcome and indicates the transition of an individual from a clinical/dysfunctional population to a normal/functional population. It has been suggested to use information on reliable and clinically significant change in feedback systems for clinicians (Lambert, Harmon, Slade, Whipple, & Hawkins, 2005). In a feedback driven quality management system for eating disorders, this method has been successfully implemented (Kordy, Hannöver, & Richard, 2001).

To estimate the reliability of change in two measurements, Jacobson and Truax (1991) propose calculating a *reliable change index* (RC). Similar to the approach described for normative feedback, it can only be calculated if information about the reliability of the (sub-)test, as well as normalisation data for a comparable sample (e.g. patients with the same disorder) are available:

$$RC = \frac{x_2 - x_1}{S_{diff}}$$

S_{diff} describes the standard error of difference between the pretest score (x_1) and the posttest score (x_2). It can be calculated with the test-retest reliability (r_{xx}) of the test and the standard deviation of a comparable sample (s1):

$$S_{diff} = \sqrt{2} \times s_1\sqrt{1 - r_{xx}}$$

The observed change can be considered reliable if RC > 1.96 (p<.05).

According to Jacobson and Truax (1991), three cutoffs can be used to investigate the clinical significance of change:

1. The post score of functioning should be at least two standard deviations different from the mean level of functioning of the clinical population in the direction of improved functioning (cutoff *a*).
2. The post score of functioning should be within two standard deviations of the mean of a functional or normal population (cutoff *b*).
3. The post score of functioning should be closer to the mean of the normal population than it is to the mean of the clinical population (cutoff *c*).

Cutoff c at which the likelihood for the individual belonging to one group or another is equal, can be calculated with the following formula:

$$c = \frac{(M_{clin} \times SD_{norm}) + (M_{norm} \times SD_{clin})}{SD_{norm} + SD_{clin}}$$

If there is significant overlap between the clinical and normal population, as is often the case in clinical psychology, cutoff *a* becomes a more stringent criterion, whereas cutoff *b* becomes a more lenient criterion. For that reason, cutoff *c* is recommended, as it takes both populations into consideration (Jacobson, Roberts, Berns, & McGlinchey, 1999). For example: mean scores on the GAD7-scale of *M*=14.4 (*SD*=4.7) were reported for patients with GAD and *M*=4.9 (*SD*=4.8) in a healthy population (Spitzer et al., 2006). In this example and population, cuttoff *c* is 9.7 and, given that the change is reliable, scores below the cutoff indicate clinically significant change.

Evans et al. (1998) suggest giving greater importance to reliable change if clinical and normal population have considerate overlap. Furthermore, they suggest that for severe problems (e.g. in inpatients) it may be more appropriate to compare them against a less unwell population (e.g. outpatients) rather than comparing data with a normal or general population.

For ipsative feedback in e-mental health applications, clinically significant and reliable change should be taken into consideration. Different feedback for different scenarios of observed change should be generated. Change in the desired direction that is not reliable should be appreciated and reinforced to increase motivation. However, it may be worth pointing out in the feedback that a certain amount of fluctuation is normal and expected. If the observed change is reliable, feedback could focus on maintaining change and moving further toward a non-clinical range. Feedback on reliable and clinically significant change should acknowledge the individual's progress. Once this desired outcome has been achieved in one area of behaviour, other problem behaviours can become the focus of the feedback.

4.6.6 Summary

This section discussed the challenges of providing personalised feedback in e-mental health applications and presented different options for giving summative, normative and ipsative personalised feedback. Where possible, feedback should be given immediately after assessment and rather than providing questionnaire scores in feedback, it is preferable to transform information from assessments into more user-friendly, easily comprehensible and statistically supported information. Finally, feedback should combine different feedback strategies, such as normative, summative and ipsative.

A caveat is that these suggestions are currently based on limited evidence and future research should assess the feasibility, acceptability and efficacy of feedback as described in this chapter. Available research on feedback has mainly focused on generic feedback, targeted feedback and personalised normative feedback. However, the particular working mechanisms of feedback are relatively unknown, especially in the emerging field of e-and m-mental health, and future research should focus on the efficacy of particular feedback types and working mechanisms.

4.7 Feedback in the present intervention

Feedback used in the online prevention programme followed the guideline outlined above. A combination of summative and normative feedback was chosen. After completing each questionnaire, students received feedback that consists of three elements. This included a description of the questionnaire and its relevant subscales, a verbal summary of participants' responses and, if applicable, a comparison of students' scores with the scores from a comparable sample. As discussed above, normative feedback could only be provided where means and standard deviations for each questionnaire scale from a comparable sample are available. The verbal summary of the responses was dependant on the referred score of each subscale. If the participants' scores fell into a certain range, a predefined feedback text snippet was provided. Figure 4.8 shows a summary of the feedback provided in the intervention.

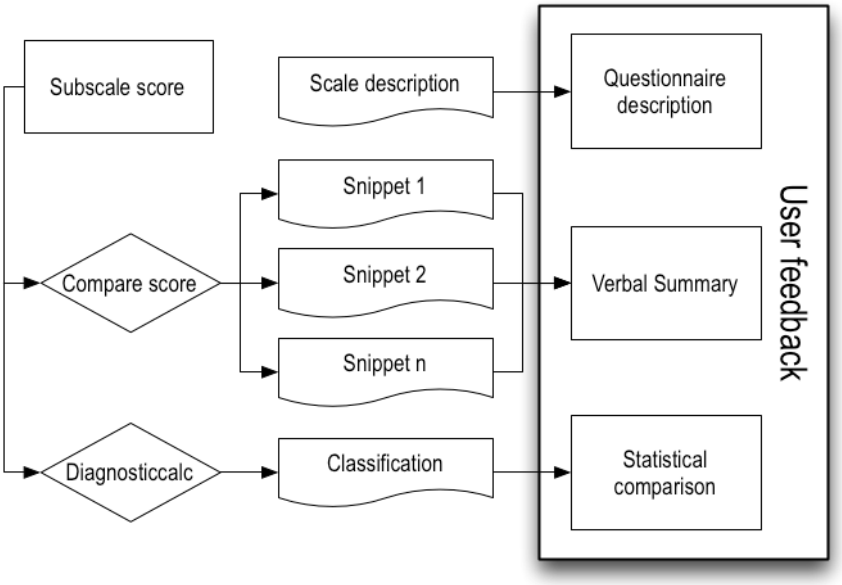

Figure 4.8: Personalised feedback in the trait-focused and control intervention

4.8 Summary

This chapter outlined the development and content of an internet-based prevention programme for common mental disorders in students. In line with the recommendations for intervention development by the MRC and the NICE guideline, the programme builds on evidence based principles (i.e. the CBT framework) and was developed in conjunction with students and experts. To evaluate the intervention in a randomised controlled trial, an active control intervention was developed. Whereas the

trait-focused intervention targeted personality risk factors, the control intervention targeted perceived stressors of students living. Computerised personalised feedback was developed for the trait-focused intervention and the control intervention.

Chapter 5 - A randomised controlled trial of a trait-focused internet-based prevention programme for common mental disorders in university students

5.1 Chapter scope

The previous chapter provided a detailed outline of the development and content of an internet-based prevention programme targeting common mental disorders in students. This chapter presents the results of a randomised controlled trial investigating the efficacy of this intervention. Students were classified into those at high risk and low risk for developing common mental disorders with the aim of determining as to whether these groups differ in their ability to benefit from the programme.

5.2 Introduction

Mental disorders, such as depression, anxiety disorders, substance abuse disorders and eating disorders, are common in young adults from 18 to 25 years of age and therefore in student populations (Kessler et al., 2005). However, young adults often refrain from seeking professional help for mental health problems and choose rather to talk to a friend or family member about their problems or to use self-help material (Chew-Graham et al., 2003; Padesky & Hammen, 1981).

Specifically online, efforts have been made to prevent mental disorders in students. The efficacy of "MoodGYM", a web-based intervention for the treatment and prevention of depression, was investigated in a study with a community sample and university students. Whereas the intervention was shown to reduce anxiety and depression in the community sample, no change was observed in the subsample of students (Christensen, Griffiths, & Korten, 2002). An online anxiety prevention programme for students successfully reduced depressive symptoms and negative cognitions about the consequences of anxiety or the dangerousness of anxiety symptoms, but failed to reduce anxiety sensitivity, a risk factor for the development of anxiety disorders (Kenardy et al., 2003). In an attempt to reduce binge-drinking in students, printed or internet-based newsletters addressing beliefs on alcohol, risks of heavy drinking and providing strategies to reduce drinking were disseminated. Students reported a significantly lower past 30-day frequency of drinking after receiving either form of newsletter (Moore et al., 2005). A recent review of an internet-based prevention programme for eating disorders ("Student Bodies") suggested that the intervention successfully reduces eating

disorders symptomatology in female students, but is not more effective when targeting students at higher risk (Beintner et al., 2011).

The interventions described above are only examples of the work that has been conducted with regard to internet-based prevention of mental disorders in students. However, on balance the research suggests that the efficacy of these interventions is limited or that it is restricted to a subsample of students, particularly students already affected by the disorder. In addition, almost all interventions only target risk factors of single disorders. Exceptions, such as MoodGYM, target both anxiety and depression. The research on risk factors of common mental disorders in students suggests that some factors such as trait anxiety, perfectionism or low self-esteem are shared between disorders. Trait anxiety is associated with the development of depression and anxiety (Clark et al., 1994) as well as eating disorders (Ghaderi & Scott, 2000). High levels of perfectionism have been linked with depression (Shafran & Mansell, 2001), anxiety disorders (Saboonchi et al., 1999) and eating disorders (Slade, 1982). Low self-esteem is considered to be a risk factor for depression (Battle, 1978), substance use disorders (Glindemann, Geller, & Fortney, 1999) and eating disorders (Shisslak, Crago, Renger, & Clark-Wagner, 1998).

Reviews of the literature identified factors that distinguish effective programmes from ineffective ones. Factors most commonly identified are targeting individuals at risk (e.g. Stice et al., 2007), personalising the intervention to the recipient and addressing skills or attitudes rather than simply providing information (Walters & Bennett, 2000).

This chapter presents a randomised controlled trial of an internet-based prevention programme targeting personality risk factors of common mental disorders in university students. The intervention aimed to utilise the fact that common mental disorders in students have shared risk factors and this is the first intervention to target multiple mental disorders in students by addressing shared risk factors.

5.3 Aims

The primary aim of this study was to investigate the efficacy of a trait-focused internet-based CBT prevention programme for students targeting risk factors of common mental disorders, including depression, anxiety disorders, substance abuse disorders, and eating

disorders. In addition, the study sought to demonstrate that the trait-focused intervention is superior to a control intervention providing advice on how to deal with stressors at university and that students at high risk for developing mental health problems particularly benefit from the intervention. Hence, the following hypotheses were generated:

5.4 Hypotheses

H_1: It is hypothesised that students will report lower depression, anxiety and greater psychological health after having received the trait-focused intervention compared to students having received the control intervention.

H_2: Students at high risk for developing common mental disorders will benefit more from the trait-focused intervention than students at low risk.

5.5 Methods

5.5.1 Participants

Participants were recruited from two large London universities (Kings College London [KCL] and University College London [UCL]), via email. The email targeted undergraduate and postgraduate students and invited them to participate in a study on personality and strengths and weaknesses. Students were offered a £15 voucher for an online shopping portal (Amazon) upon completion of all assessments. In the email, it was outlined that students would have to register on the project website, complete questionnaires on personality, behaviour and psychological health and would be granted access to helpful information on how to deal with the challenges of student living. No reference was made to the fact that they would be randomised to different conditions. As UCL has 24,859 students and KCL has approximately 23,500 students, participants were recruited from a total pool of approximately 47,800. The email contained the link to the project website, where students could get more information about the study and view a detailed information sheet and consent form. Any student currently attending a full-time course at a Higher Education Institution in the UK was considered eligible for the study and there were no exclusion criteria.

The website for students was called "PLUS" (Personality and Living of University Students) and was described in the recruitment material as an online resource on which students can find out more about their strengths and weaknesses, and learn how to deal with the challenges of students living. On the project homepage (www.plusonline.org.uk) students could get more information about the study and the researchers involved. To participate in the study, students had to register and create an account with the intervention. They were asked to provide a valid email address, information about their age, course, university, ethnicity, height and weight. Although participation was anonymous, the email was required in order that email reminders and voucher codes could be sent to students. After registration, students were able to complete the first set of questionnaires. Upon completion of the questionnaires, students received access to the intervention section. Immediate summative and normative feedback was provided with respect to each questionnaire. A detailed description of the feedback format can be found in Chapter 4. Ethical approval for this study was given by the King's College London Psychiatry, Midwifery and Nursing Research Ethics Sub-committee (REF PNM 10/11-101) and the Research Ethics Committee of the University College London (no reference number provided).

5.5.2 Design

This study was a randomised controlled trial with three measurement points. Upon completion of the initial assessment, students were randomised to one of two conditions and gained access to either a trait-focused intervention or a control intervention. The latter included information on how to find accommodation and deal with housing related issues, money saving tips for students and a module on time management. The trait-focused intervention was cognitive behavioural and interactive and consisted of modules on how to challenge unhelpful perfectionism, deal with difficult emotions, improve self-esteem, and deal with anxiety and worry. A detailed description of the module content and development can be found in Chapter 4. Modules could be completed in any order. However, in the trait-focused intervention, it was suggested that students start with an introductory module, as other modules built on the content of this one. Two follow-up assessments were conducted six weeks and 12 weeks after completing the first set of questionnaires. Students received reminder emails inviting them to participate in these follow-up assessments.

5.5.3 Measures

Similar to the internet-based study presented in Chapter 2, this study included personality measures and measures of psychological health. The majority of measures used in this study was previously used in the study on personality risk factors and mental health and will be only briefly described here.

Primary outcome measures

The scores of the Patient Health Questionnaire, Generalised Anxiety Disorders Scale and the Psychological Health subscale of the World Health Organization Quality of Life Questionnaire formed the primary outcomes in this trial. The Patient Health Questionnaire and the Generalised Anxiety Disorders Scale were chosen, as they assess depression and anxiety, which are the most commonly observed symptoms of common mental disorders in students. The Psychological Health subscale of the World Health Organization Quality of Life Questionnaire was chosen, as it is a general indicator of mental health, regardless of disorder.

Patient Health Questionnaire

The Patient Health Questionnaire (PHQ; Kroenke et al., 2001) is a self-report questionnaire for the diagnosis of depression and the assessment of severity of depressive symptoms. It includes nine items to which participants indicate how often they have experienced each symptom within the last two weeks on a four-step rating scale ranging from "not at all" (0) to "nearly every day" (3).

Generalised Anxiety Disorder Scale

The Generalised Anxiety Disorder scale is a brief self-report questionnaire used to assess symptoms of Generalised Anxiety Disorder (GAD, Spitzer et al., 2006). It consists of seven items and participants have to indicate how often they have experienced symptoms within the past two weeks on a four-step rating scale ranging from "not at all" (0) to "nearly every day" (3).

World Health Organisation Quality Of Life-BREF

The WHOQOL-BREF (The WHOQOL Group, 1998a) is self-report measure assessing quality of life on four different domains: physical health, psychological health, social relationships, and environment. It contains 26 items and participants have to

respond on a five-step rating scale of different format. The domains physical health, social relationships, and environment formed secondary outcomes in this study.

Secondary outcome measures

IAPT Phobia Scales

The phobia scales from the IAPT project (Improving Access to Psychological Therapies) consists of three items that refer to different situations people can avoid (Department of Health, 2008). Participants have to indicate to what extent they avoid each type of situation on a nine-step rating scale ranging from "Would not avoid" (0) to "Always avoid it" (8). For the purpose of this study, the three items were summed for a general measure of avoidance. Due to the nature of the scale, no information on psychometric properties were available.

Alcohol Use Disorders Identification Test

The Alcohol Use Disorders Identification Test (AUDIT) is a self-report measure by the World Health Organization for the screening of individuals with harmful or hazardous drinking patterns (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993). It consists of 10 items with different answer formats. Three items assess hazardous drinking (i.e. drinking patterns that increase the risk of harmful effects). A further three items refer to harmful use (i.e. physical and psychological consequences of drinking) and the remaining four items assess symptoms of alcohol dependence, such as increased tolerance or loss of control over drinking.

The AUDIT has been evaluated in many studies and a variety of samples. The reliability of the AUDIT in a student sample has been investigated by Fleming, Barry, and MacDonald (1991). They reported the internal consistency (Chronbach's α) with .80 and a sensitivity of 84 per cent at a cut-off of 11. The test-retest reliability of the AUDIT is reported with .86 by the authors (Saunders et al., 1993). In a study of 302 students, Kokotailo et al. (2004) found that the AUDIT was better for detecting high risk drinking in students than other measures, but performed more poorly with regard to detecting alcohol dependency. Bohn, Babor, and Kranzler (1995) reported that the AUDIT total score correlates with other measure of drinking such as the Michigan

Alcohol Screening Test (Skinner, 1979) or the CAGE (Mayfield, McLeod, & Hall, 1974).

Drug Use Disorder Identification Test

The Drug Use Disorder Identification Test (DUDIT) is a self-report measure developed in parallel with the AUDIT for the identification of drug-related problems (Berman, Bergman, Palmstierna, & Schlyter, 2005). It contains 11 items to which participants have to respond on different rating scales. Summing up the responses to each item creates a final score and higher scores indicate more severe problems with drug use. One evaluation study by the authors of the measure investigated the properties of the DUDIT in a Swedish criminal justice and detoxification setting. In this study, the DUDIT was reported to have an internal consistency (Chronbach's α) of .80, and a sensitivity and specificity in detecting ICD-10 dependence syndrome of 90 per cent and 88 per cent (Berman et al., 2005). A more recent study investigated the psychometric properties of the DUDIT in a residential and outpatient treatment setting of substance abusers. The authors found the internal consistency to be $\alpha = .94$ and demonstrated that the DUDIT score sufficiently differentiated between drug abusers and non-abusers (Voluse et al., 2012).

Eating Disorders Diagnostics Scale

The Eating Disorders Diagnostics Scale (EDDS) is a commonly used screening tool for the identification of eating disorders according to the DSM-IV criteria (Stice, Telch, & Rizvi, 2000). It includes 22 items with different answer formats, which cover symptoms of anorexia nervosa, bulimia nervosa and binge eating disorders. A full diagnosis for each DSM-IV eating disorder can be obtained by checking the appropriate items. Additionally a symptom composite can be obtained by summing the responses of all items apart from those referring to weight, height and the use of oral contraceptives. The authors reported a test-retest agreement for diagnosis of 89 per cent to 98 per cent depending on the disorder (Stice, Fisher, & Martinez, 2004). With regard to the symptom composite score, a one-week test-retest reliability of $r = .87$ was reported. To validate the questionnaire, the authors compared the agreement of diagnosis between the EDDS and a structured clinical interview. High overlap was found with agreement rates of 93 per cent to 99 per cent. In addition, the EDDS symptom composite

correlated between .36 and .66 with scores from the Eating Disorders Examination (Fairburn & Cooper, 1993). Other studies supported these psychometric properties (Stice et al., 2004).

Frost Multidimensional Perfectionism Scale

The Frost Multidimensional Perfectionism Scale is a self-report measure assessing perfectionism on the dimensions: Concerns over Mistakes, Personal Standards, Parental Expectations, Parental Criticism, Doubts about Actions, and Organization (Frost et al., 1990). In the present study, only the subscales Concern over Mistakes, Personal Standards and Doubts about Action were included. Participants have to respond to each item on a five-point rating scale ranging from "strongly disagree" to "strongly agree". The questionnaire was included to assess the risk of students and because of the fact that the trait-focused intervention targets perfectionism.

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale (RSES) is a self-report questionnaire to assess self-esteem (Rosenberg, 1965). It includes 10 items and participants have to indicate their agreement to each item on a four-step rating scale ranging from “Strongly agree” to “Strongly disagree”. This questionnaire was included, as one of the modules in the trait-focused intervention targets low self-esteem.

Additional measures

NEO Five-Factor Personality Inventory

The NEO Five-Factor Personality Inventory (NEO FFI; Costa & McCrae, 1992) is the short version of the revised NEO Personality Inventory (Costa et al., 1991) and assesses personality on the domains: Neuroticism, Extraversion, Openness, Agreeableness and Conscientiousness. Twelve statements represent each domain and participants have to indicate their agreement to each statement on a rating scale ranging from “strongly disagree” to “strongly agree”. This questionnaire was included to assess the risk of students for developing common mental disorders.

Substance Use Risk Profile Scale

The Substance Use Risk Profile Scale is a self-report measure assessing four motivational profiles for the use of alcohol and drugs (Woicik et al., 2009). Motivational profiles include Anxiety Sensitivity, Hopelessness, Sensation Seeking and Impulsivity. Anxiety Sensitivity describes how the subject deals with anxiety-related body sensations. The Hopelessness scale assesses to what extent the individual feels happy, content and positive. Sensation Seeking refers to the tendency to try out different and possibly dangerous experiences. The Impulsivity subscale assesses to what extent the individual thinks before saying or doing things or acts on instinct. Participants have to indicate their level of agreement to a total of 23 items on a four-point rating scale ranging from "strongly disagree" (1) to "strongly agree" (4). Similarly to the NEO, this questionnaire was included to assess the risk of students for developing common mental disorders.

Upon completion of the study, students were sent a link to a feedback form on which they could provide feedback on the website and study. Questions included items on the comprehensibility and helpfulness of the questionnaire, items on the use and helpfulness of the individual modules, items on the design and usability of the website as well as open questions to provide general feedback.

5.5.4 Randomisation, blinding and protection against bias

Participants were randomised by the online software to either the trait-focused intervention or the control intervention. Due to the high number of participants recruited for this study, stratification was not considered necessary. As the assessments were conducted as part of the online intervention without any involvement of the researcher, data collection was protected against bias without the need for blinding.

5.5.5 Data analysis

In this study, two types of missing data had to be addressed. The first is missing data on an individual item level. In some cases, students forgot or chose not to answer single items on a questionnaire. To reduce loss of data due to single missing items, data on an item level were imputed for some questionnaires. In the classical test theory, each item assesses the desired quality. By removing items from a scale (i.e. in a short version of a questionnaire or due to missing items) the reliability of the scale might be

compromised. For this reason and considering that most questionnaires used in this study have a relatively small total number of items per scale, scores were only computed if one item per scale was missing. For questionnaires, where the mean across items constitutes the score, the mean was computed if only one item was missing to maximise reliability. Similarly, for questionnaires, where a sum was to be computed, the sum was calculated for the remaining items on a scale and adjusted for the number of items. Due to a technical problem with the DUDIT questionnaire, data were missing for every participant on one item (item 10) under certain circumstances. The technical problem was later fixed and it was discovered that it only occurred when participants responded in a certain way to this item. The missing item was imputed in this case, as the response was known.

The second type of missing data was listwise missing data. A large number of participants who registered on the website and completed the initial assessment, dropped out during the course of the study and did not complete the second or third assessment (see Figure 5.1). Different approaches for dealing with missing data exist, depending on the percentage of missing data/cases, whether data are missing (completely) at random and other factors. In this study, linear mixed models were chosen for data analysis, as they can handle large proportions of missing data/cases (Field, 2009). Further details about this method are provided below.

For repeated measures designs with fixed and random effects, mixed models are a suitable strategy for dealing with missing data, as they account for cases with missing values without losing power. However, a requirement for the use of mixed models is that missing data are *missing completely at random* or at least *missing at random*. When data are *missing completely at random*, no other variable (neither assessed nor not assessed) predicts the missingness of a response or score. Data are considered *missing at random* when one or more variables that were assessed predict the missingness.

After consultation with a statistician, it was suggested to conduct independent samples *t*-tests to determine whether any of the assessed variables has an impact on the occurrence of missing data in another variable. Hence, for each scale at baseline, first follow-up and second follow-up, independent samples *t*-tests were performed comparing dropouts and completers on baseline characteristics. To account for multiple

testing scales, a Bonferroni correction was applied. For categorical variables, χ^2 tests were performed.

No instructions were given to students on when to complete the online intervention modules. Hence, in the interpretation of the results the primary focus was on the comparison between baseline scores and scores at the second follow-up (T_2), to account for the fact that some students may have completed the intervention between baseline and T_1 and others between T_1 and T_2.

5.6 Results

5.6.1 Sample

A total of 1141 students created a profile on the website and started completing questionnaires. More students wished to participate in the study, but due to limited availability of vouchers, registrations were limited to 1150 individuals. Nine online accounts were either created by the web developer or the primary investigator for testing and were removed from the dataset prior to analysis. Table 5.1 shows the demographics of the students, who registered for the study.

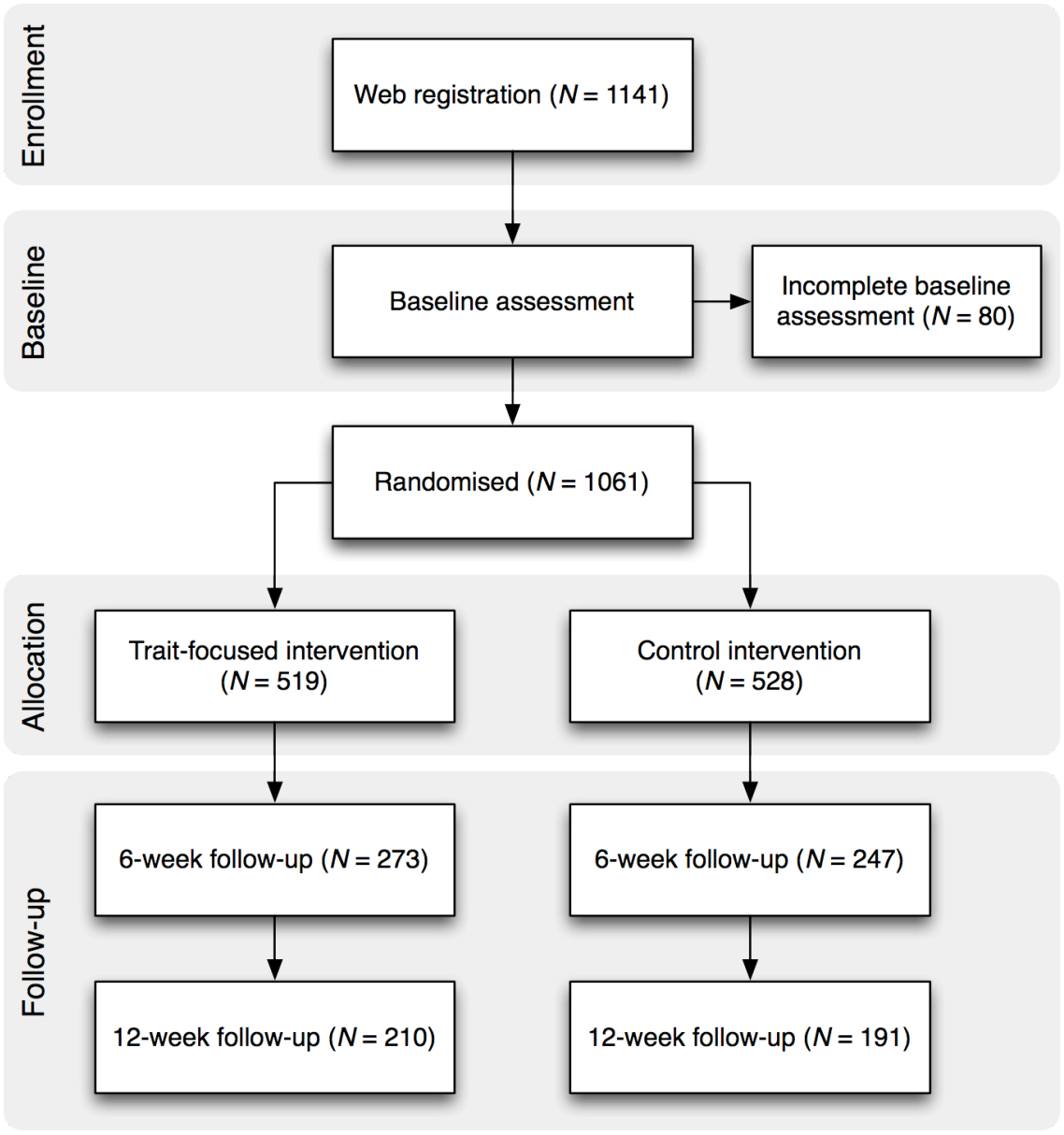

Figure 5.1: Participant flow through the study

Recruitment of participants targeted students in their first three years of university, however students up to year six took part. The majority of participants (70.5 per cent) were female, and in their first (*n*=227) or second (*n*=126) year of university. On average most students were single (*n*=386) and lived in shared accommodation (*n*=173) or student halls (*n*=164). In addition with BMI, it was found that age was not normally distributed, as most students were between 18 and 21. Given the high sensitivity of the Kolmogorov-Smirnov test and considering the relatively large sample size, age and BMI were examined visually (Field, 2009). Consequently, the distribution of BMI was deemed to be suitable for parametric tests.

Table 5.1: Overall participant demographics

Demographic		*N* (%)
Age	Range	18 - 57
	Mdn	21
Sex	Female	804 (70.5)
	Male	337 (29.5)
BMI	Range	10.2 - 46.6
	M (*SD*)	21.9 (3.6)
Year of studies	Range	1-6
	Mdn	1
Ethnicity	British Asian	98 (8.6)
	Asian other	163 (14.3)
	Black British	11 (1.0)
	Black other	4 (0.4)
	Other	85 (7.4)
	White British	549 (48.1)
	White other	231 (20.2)
Marital status	Divorced	3 (0.3)
	Living together	121 (10.6)
	Married	44 (3.9)
	Separated	3 (0.3)
	Single	970 (85.0)
Housing situation	Living alone	103 (9.0)
	Shared accommodation	555 (48.6)
	Student halls	335 (29.4)
	With parents	148 (13.0)

5.6.2 Dropouts

To investigate whether dropout in this study was random or affected by assessed variables, independent samples *t*-tests were conducted to compare individuals who dropped out with those who remained in the study. Table 5.2 shows the results of the *t*-test comparing students that dropped out at T_1 on baseline variables with those that continued with the study. Given the high number of participants in this study and the high number of tests performed (26), a Bonferroni correction was applied resulting in a significance level of $p = .0019$.

Table 5.2: Baseline differences between dropouts and completers at T_1

	Group			
Scale	Dropout *M* (*SD*)	No dropout *M* (*SD*)	*t* (*df*)	*p*
Age	21.86 (4.50)	21.75 (3.84)	0.47 (1138)	.639
BMI	21.97 (3.84)	21.88 (3.35)	0.41 (1129)	.686
Year of studies	1.79 (1.07)	1.94 (1.11)	-2.20 (1103)	.028
AUDIT Score	6.77 (5.33)	5.90 (5.06)	2.76 (1077.44)	.006
DUDIT Score	1.27 (3.41)	1.02 (2.96)	1.28 (1067.83)	.200
EDDS Score	6.05 (3.70)	5.54 (3.68)	2.19 (1004)	.029
PHQ Score	7.45 (5.89)	6.42 (5.88)	2.81 (1033)	.005
GAD Score	5.54 (5.16)	4.89 (4.99)	2.04 (1029)	.041
IAPT Score	5.83 (5.36)	5.34 (4.77)	1.54 (1027)	.124
FMPS Concerns over Mistakes	26.26 (8.01)	25.25 (7.93)	2.05 (1057)	.041
FMPS Personal Standards	25.18 (5.19)	25.14 (4.99)	0.11 (1057)	.910
FMPS Doubts about Actions	11.65 (3.73)	11.23 (3.73)	1.83 (1057)	.067
NEO Neuroticism	26.30 (9.67)	25.05 (10.14)	2.03 (1043)	.043
NEO Extraversion	26.84 (7.60)	27.26 (7.40)	-0.91 (1043)	.365
NEO Openness to Experience	27.39 (5.12)	27.49 (5.32)	-0.33 (1044)	.742
NEO Agreeableness	30.37 (6.61)	31.07 (6.56)	-1.74 (1044)	.083
NEO Conscientiousness	29.18 (7.68)	30.14 (7.21)	-2.07 (1043)	.039
RSES Score	18.06 (6.20)	18.89 (6.13)	-2.21 (1065)	.027
SURPS Sensation Seeking	15.70 (3.39)	15.40 (3.38)	1.46 (1080)	.144
SURPS Impulsivity	**10.88 (2.33)**	**10.38 (2.25)**	**3.58 (1080)**	**.000**
SURPS Anxiety Sensitivity	12.72 (2.74)	12.54 (2.48)	1.12 (1078.63)	.264
SURPS Introversion/Hopelessness	19.51 (3.16)	19.68 (3.00)	-0.92 (1078)	.356
WHOQOL Physical Health	15.40 (2.47)	15.88 (2.45)	-3.17 (1030)	.002
WHOQOL Psychological Health	13.16 (3.26)	13.63 (3.31)	-2.28 (1033)	.023
WHOQOL Social Relationships	13.15 (3.67)	13.70 (3.68)	-2.38 (1009)	.018
WHOQOL Environment	14.58 (2.37)	14.85 (2.27)	-1.87 (1032)	.062

Note: bold lines indicate significant differences at $p < .0019$

The results indicate that students that dropped out at T_1, differed from those who continued with the study only on the Impulsivity subscale of the SURPS. This suggests that students who dropped out at T_1 were more impulsive. On other scales, small but non-significant differences were observed. To test whether or not students with higher psychopathology were more likely to drop out, a chi-square test was performed comparing the number of students at risk between students who dropped out and those,

who did not. No significant differences in terms of the proportion of students at risk was found between dropouts at T_1 and completers χ^2 (1) = 0.181, p = .696. Differences on the Impulsivity subscale of the SURPS were observed between students at high and low risk (see below). Considering that the risk status is a fixed factor in the mixed model, Impulsivity was not included as a covariate in the model, as it shares variance with the risk status.

A proportion of students, who completed the second assessment went on to drop out at T_2. Independent samples *t*-tests were performed to compare students, who completed T_1, but not T_2 on baseline variables with those students, who completed all three assessments. No differences were found between the groups, suggesting that dropout at T_2 was not related to interindividual differences at baseline.

5.6.3 Testing the assumptions of linear mixed models

Linear mixed models are based on linear regression models and data need to meet several assumptions. The first assumption is that predictors must be categorical or quantitative variables and should have variation in their values (Field, 2009). All predictors in this study were categorical variables (experimental group, measurement time and risk status). There should be no multicollinearity, meaning that predictors in the model should not correlate with each other (Field, 2009). In the present study, this was given due to the fact that the predictors were independent and randomised.

Residuals in the model are required to be random and normally distributed (Field, 2009). This assumption is often met if the outcome variable is normally distributed. In this study, many outcomes such as the PHQ, GHD, AUDIT, DUDIT, IAPT phobia scales or EDDS scores were positively skewed, which reflects the distribution of the variable in the population (e.g. many people without depressive symptoms, fewer with high severity). A log transformation of the variables did not improve distribution towards normality. Therefore, these outcome variables were included untransformed and the residuals were checked. For all variables that were not normally distributed, the residuals appeared normally distributed when examined graphically.

Data for mixed models is required to meet the assumption of homoscedasticity, which describes an equal variance for all values of the predictor variables. Homoscedasticity

was checked for all outcomes and data of most variables met the assumption. However, variances of the PHQ, GAD, IAPT and RSE scores were not equal. As transforming the data of these scales did not improve the situation, they were included untransformed. Values on all outcome variables furthermore have to come from different entities and are therefore independent. As the name implies, linear mixed models can only model linear relationships between variables.

5.6.4 Effectiveness of Randomisation

Using independent sample *t*-tests, it was investigated whether differences between the control group and the trait-focused intervention group existed on any of the variables at baseline. A Bonferroni correction was applied due to the high number of comparisons (26) resulting in a significance level of $p = .0019$. At this significance level, no significant differences were observed on any scale, suggesting that the randomisation procedure created two comparable groups.

Table 5.3: Means, standard deviations and *t*-test results of control and trait-focused intervention group

	Group			
Scale	Control *M* (*SD*)	Trait-focused *M* (*SD*)	*t* (*df*)	*p*
Age	21.83 (4.35)	21.79 (4.08)	0.168 (1138)	.532
BMI	21.89 (3.69)	21.96 (3.57)	-0.33 (1129)	.352
Year of studies	1.86 (1.12)	1.86 (1.05)	.079 (1103)	.937
AUDIT Score	6.17 (5.18)	6.53 (5.26)	-1.16 (1079)	.248
DUDIT Score	1.16 (3.04)	1.14 (3.36)	0.10 (1072)	.921
EDDS Score	5.78 (3.60)	5.83 (3.80)	-.194 (1004)	.846
PHQ Score	6.97 (5.92)	6.88 (5.89)	0.24 (1033)	.811
GAD Score	5.14 (4.74)	5.29 (5.40)	-0.48 (1029)	.632
IAPT Score	5.69 (5.21)	5.48 (4.95)	0.68 (1027)	.497
FMPS				
Concerns over Mistakes	25.68 (7.78)	25.84 (8.19)	-0.33 (1057)	.743
Personal Standards	25.24 (4.88)	25.07 (5.30)	0.54 (1057)	.587
Doubts about Actions	11.34 (3.71)	11.55 (3.75)	-0.93 (1057)	.351
NEO				
Neuroticism	25.57 (9.94)	25.79 (9.91)	-0.35 (1043)	.725
Extraversion	26.96 (7.60)	27.14 (7.40)	-0.39 (1043)	.694
Openness to Experience	27.23 (5.43)	27.65 (4.99)	-1.30 (1044)	.194
Agreeableness	30.96 (6.49)	30.48 (6.69)	1.19 (1044)	.233
Conscientiousness	29.66 (7.34)	29.66 (7.59)	0.00 (1043)	.997
RSES Score	18.59 (6.05)	18.34 (6.30)	0.66 (1065)	.511
SURPS				
Sensation Seeking	15.61 (3.45)	15.50 (3.33)	0.51 (1080)	.607
Impulsivity	10.62 (2.24)	10.67 (2.37)	-0.32 (1080)	.751
Anxiety Sensitivity	12.58 (2.57)	12.68 (2.66)	-0.63 (1079)	.526
Introversion /Hopelessness	19.55 (3.05)	19.63 (3.13)	-0.42 (1078)	.674
WHOQOL				
Physical Health	15.66 (2.39)	15.62 (2.55)	0.22 (1030)	.829
Psychological Health	13.37 (3.28)	13.42 (3.31)	-0.21 (1033)	.832
Social Relationships	13.26 (3.78)	13.59 (3.58)	-1.44 (1009)	.149
Environment	14.86 (2.30)	14.57 (2.34)	1.99 (1032)	.047

5.6.5 Identifying students at risk

Chapter 2 of this thesis presented a study investigating personality risk factors and mental health symptoms in university students. A cluster analysis generated two student clusters, one of which comprised students with significantly poorer mental health. Compared to students with good mental health, these students differed on several personality variables, with Neuroticism, Concern over Mistakes (perfectionism), Doubt about Actions (perfectionism) and Hopelessness showing the highest effect sizes. A logistic regression, with these four personality risk factors as predictors of risk, correctly classified 87 per cent of students.

The resulting binary-logistic model from this regression was used in the present study to identify students at risk for developing mental health problems on the basis of their personality. Figure 5.2 shows the formula for a logistic regression model with four predictors, as is the case with the personality risk factors.

$$P(Y) = \frac{1}{1 + e^{-(b_0 + b_1 x_{1i} + b_2 x_{2i} + b_3 x_{3i} + b_4 x_{4i})}}$$

Figure 5.2: Logistic regression model with four predictors

Probability $P(Y)$ was computed for each individual in the present study using the results from personality questionnaires and the factors obtained in the logistic regression in the previous study. Table 5.4 shows predictor weights and constant of the logistic regression model used to identify students at risk.

Table 5.4: Logistic regression model components and values

Factor	Description	Value
b_0	Intercept	-11.869
b_1	Predictor weight	0.029
x_{1i}	FMPS Concern over Mistakes score	Individual
b_2	Predictor weight	0.101
x_{2i}	FMPS Doubts about Action score	Individual
b_3	Predictor weight	0.177
x_{3i}	NEO Neuroticism score	Individual
b_4	Predictor weight	0.163
x_{4i}	SUPRS Introversion /Hopelessness score	Individual

P(*Y*) can have values ranging from zero to one and in the binary logistic regression, each individual scoring above 0.5 is assumed to have the outcome. With a threshold of 0.5, surprisingly only 14 per cent of students are classified as at risk, although students for this study were recruited from the same universities as students in the study on personality risk factors. In the previous study, about 20 per cent of students were classified at high risk. Figure 5.3 shows the distribution of probability values derived from the logistic regression model. As can be seen, the majority of students are below 0.3. On balance, it is likely that students at risk were slightly overrepresented in the previous study, making the logistic regression model conservative. Table 5.5 shows the percentage of students at high risk for different cutoff values of *P*(*Y*). In this study, a cutoff of 0.4 instead of 0.5 was chosen. With this cutoff, 19.5 per cent of students are classified at risk, which is in accordance with other research on student mental health (e.g. Webb et al., 1996).

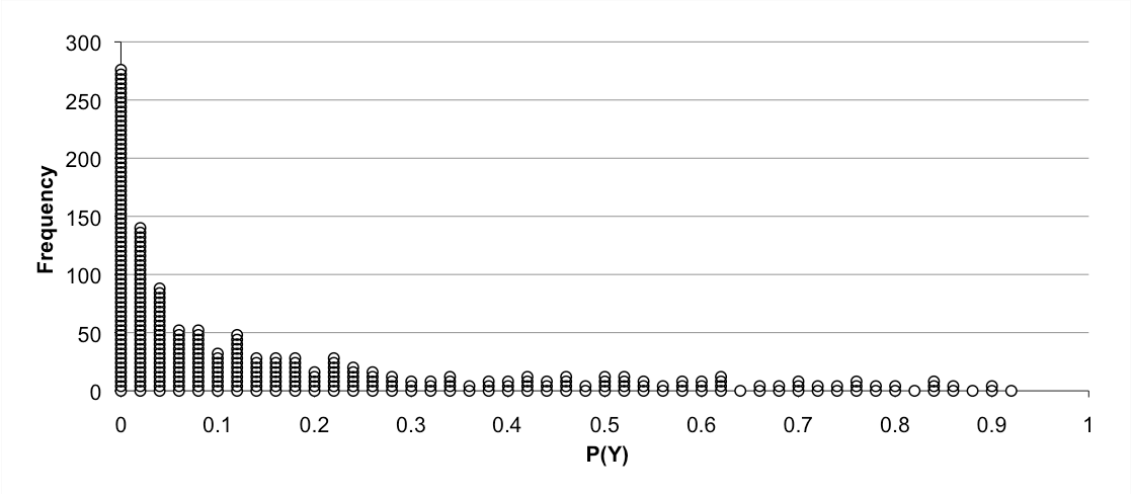

Figure 5.3: Distribution of probabilities of risk

Table 5.5: High risk cutoff and percentages

P(*Y*) cutoff	% students at high risk
0.6	9.7
0.5	14.3
0.4	19.5
0.3	24.1
0.2	33.8

High risk and low risk students were compared on the remaining personality variables with independent samples *t*-tests, with a Bonferroni correction applied for 12 tests (p = .0042). Results are shown in Table 5.6. Significant differences on personality variables were observed on all perfectionism subscales, Neuroticism, Extraversion, Agreeableness and Conscientiousness of the NEO and Impulsivity, Anxiety Sensitivity and Introversion/Hopelessness of the SUPRS.

Table 5.6: Mean, standard deviations and *t*-test comparisons of personality variables for students at high risk and low risk

	Risk			
	Low	High		
Scale	*M* (*SD*)	*M* (*SD*)	*t* (*df*)	*p*
FMPS				
Concerns over Mistakes*	23.80 (6.98)	33.95 (6.65)	-18.76 (1038)	<.001
Personal Standards	24.79 (5.01)	26.82 (5.12)	-5.17 (1038)	<.001
Doubts about Actions*	10.45 (3.28)	15.52 (2.62)	-23.49 (371.90)	<.001
NEO				
Neuroticism*	22.35 (7.85)	39.34 (4.26)	-42.08 (576.50)	<.001
Extraversion	28.24 (7.06)	22.25 (7.46)	10.72 (1036)	<.001
Openness to Experience	27.31 (5.20)	27.94 (5.34)	-1.54 (1037)	.125
Agreeableness	31.30 (6.41)	28.47 (6.80)	5.38 (295.42)	<.001
Conscientiousness	30.37 (7.08)	26.69 (8.25)	5.85 (278.65)	<.001
SURPS				
Sensation Seeking	15.71 (3.34)	14.98 (3.55)	2.76 (1037)	.006
Impulsivity	10.48 (2.19)	11.10 (2.62)	-3.11 (274.32)	.002
Anxiety Sensitivity	12.21 (2.54)	14.36 (2.26)	-11.07 (1036)	<.001
Introversion /Hopelessness*	20.02 (2.84)	17.73 (3.48)	9.84 (1038)	<.001

Note: asterisk indicates variables used in the logistic regression model

In a next step, students classified with this model as at high risk were compared to students at low risk on psychological and behavioural health measures. Independent samples *t*-tests were conducted with the results shown in Table 5.7. A Bonferroni correction was applied due to multiple *t*-tests (11) lowering the significance threshold to p = .0045.

Students classified as being at high risk reported higher levels of depression and anxiety as well as lower quality of life on all domains. No differences between the groups were found on the AUDIT and DUDIT score, suggesting that the frequency of drinking or using drugs and consequences related to drinking and drug use are comparable. Furthermore, students at high risk reported higher phobia-related avoidance, higher

weight and shape concerns and lower self-esteem. These findings suggest that students classified as high risk according to their personality show significantly poorer mental health on several domains and report symptoms of common mental disorders.

Table 5.7: Means, standard deviations and *t*-test comparisons of psychological and behavioural health measures for students at high risk and low risk

	Risk			
	Low	High		
Scale	*M* (*SD*)	*M* (*SD*)	*t* (*df*)	*p*
PHQ Score	5.41 (4.72)	13.16 (6.18)	-16.59 (257.86)	<.001
GAD Score	3.89 (4.06)	10.63 (5.27)	-16.81 (255.67)	<.001
WHOQOL				
Physical Health	16.14 (2.16)	13.61 (2.63)	12.59 (265.37)	<.001
Psychological Health	14.21 (2.81)	10.02 (3.02)	18.68 (1027)	<.001
Social Relationships	13.93 (3.47)	11.33 (3.81)	9.28 (1003)	<.001
Environment	15.05 (2.14)	13.31 (2.55)	8.92 (270.37)	<.001
AUDIT Score	6.22 (5.05)	6.96 (5.88)	-1.81 (1024)	.070
DUDIT Score	1.05 (2.82)	1.67 (4.63)	-1.82 (238.79)	.070
IAPT Score	5.01 (4.80)	7.89 (5.54)	-6.74 (274.07)	<.001
EDDS Score	5.21 (3.43)	8.16 (3.76)	-9.849 (270.81)	<.001
RSE Score	20.08 (5.33)	11.82 (5.09)	19.96 (1036)	<.001

The attempt of identifying students at high risk for the development of common mental disorders on the basis of personality variables was successful. Students were classified on the basis of perfectionism, trait anxiety and hopelessness. On several psychological and behavioural indicators of mental health, students at high risk showed poorer mental health.

5.6.6 Effect of the intervention

In order to investigate whether the internet-based prevention programme could reduce depression and anxiety, and improve psychological health and other indicators of mental health, linear mixed models were conducted for the primary and secondary outcome variables.

The time of assessment was included as a main effect in the fixed factors of the model. A main effect term for the risk status had to be added to the model to accommodate the fact that students differ already at baseline on a number of variables depending on their risk status. In addition an interaction term for intervention group and time and risk status were included as fixed factors to investigate whether the two interventions had

different efficacy. Finally, a three-way interaction term for intervention group, time and risk status was added to investigate whether students at high risk benefit more from the trait-focused intervention. A random intercept for each individual was included in the model and an unstructured covariance matrix was used.

In the analysis of dropouts described earlier in this chapter, the Impulsivity subscale of the SURPS was related to dropout. However, after consultation with a statistician, it was decided not to include this variable as a covariate in the model, as students at high risk and students at low risk differ on this personality domain. Hence, risk status and impulsivity share common variance and adding impulsivity to the model could potentially mask effects of the risk status. Table 5.8 shows the result of the mixed models analyses for the primary and secondary outcomes. Graphical representations of the estimated means of the primary outcomes are presented in Figure 5.4 to Figure 5.6.

Contrasts were calculated for the three-way interaction between intervention group, risk status and time to investigate in which subgroup change occurs and between which time points. The results of the contrasts along with estimated means for the primary and secondary outcome are presented in Table 5.9 and Table 5.10.

Table 5.8: Results of the linear mixed effects analysis

	Time			Time × Group			Time × Group × Risk		
	F	*df*	*p*	*F*	*df*	*p*	*F*	*df*	*p*
Primary outcomes									
PHQ score	7.75	2, 475.19	<.001	625.31	3, 625.31	.047	3.83	5, 648.20	.002
GAD score	2.96	2, 483.63	.053	627.15	3, 627.15	.083	1.48	5, 666.30	.194
WHOQOL Psychological Health	0.95	2, 465.12	.387	616.80	3, 616.80	.938	0.88	5, 606.61	.495
Secondary outcomes									
IAPT score	1.58	2, 462.84	.207	635.06	3, 635.06	.042	1.44	5, 682.90	.208
AUDIT score	11.99	2, 452.16	<.001	576.31	3, 576.31	.229	1.32	5, 562.14	.254
DUDIT score	0.11	2, 471.04	.895	586.03	3, 586.03	.602	1.03	5, 572.42	.397
EDDS symptom composite	11.03	2, 408.37	<.001	558.32	3, 558.32	.896	2.49	5, 546.44	.031
WHOQOL Physical Health	1.33	2, 471.90	.267	622.46	3, 622.46	.021	1.75	5, 627.69	.121
WHOQOL Social Relationships	1.02	2, 460.25	.360	637.82	3, 637.82	.038	1.16	5, 638.31	.330
WHOQOL Environment	0.07	2, 464.46	.935	620.67	3, 620.67	.237	0.17	5, 631.37	.975
FMPS Concern over Mistakes	1.33	2, 472.32	.266	651.11	3, 651.11	.274	1.24	5, 637.96	.289
FMPS Personal Standards	4.03	2, 472.42	.018	634.66	3, 634.66	.164	0.84	5, 621.43	.522
FMPS Doubts about Actions	0.26	2, 466.22	.775	636.86	3, 636.86	.609	1.93	5, 659.99	.088
RSES Self-esteem	0.05	2, 462.18	.950	616.97	3, 616.97	.611	1.33	5, 606.85	.249

Table 5.9: Planned contrast results for primary outcomes

Outcome	Risk	Intervention	Baseline (T_0) M (SE)	T_1 M (SE)	T_2 M (SE)	p value T_0 vs. T_1	p value T_1 vs. T_2	p value T_0 vs. T_2
PHQ score	Low	Control	5.45 (0.25)	5.40 (0.33)	5.65 (0.34)	1.000	1.000	1.000
		Trait-focused	5.37 (0.25)	5.51 (0.32)	5.06 (0.33)	1.000	.443	.925
	High	Control	13.48 (0.51)	12.28 (0.70)	12.56 (0.73)	.178	.545	.545
		Trait-focused	12.86 (0.50)	11.19 (0.64)	10.17 (0.65)	.010	.290	<.001
GAD score	Low	Control	3.89 (0.21)	4.08 (0.30)	4.30 (0.30)	1.000	1.000	.548
		Trait-focused	3.89 (0.21)	4.09 (0.29)	3.28 (0.30)	1.000	.014	.121
	High	Control	10.57 (0.44)	10.10 (0.64)	10.19 (0.66)	1.000	1.000	1.000
		Trait-focused	10.74 (0.43)	9.52 (0.58)	8.95 (0.59)	.073	.940	.008
WHOQOL psychological health	Low	Control	14.13 (0.14)	13.92 (0.16)	13.86 (0.17)	.243	1.000	.185
		Trait-focused	14.29 (0.14)	14.00 (0.16)	14.05 (0.17)	.028	1.000	.232
	High	Control	10.19 (0.29)	10.05 (0.34)	10.11 (0.37)	1.000	1.000	1.000
		Trait-focused	9.85 (0.28)	10.00 (0.32)	9.99 (0.34)	1.000	1.000	1.000

Table 5.10: Planned contrast results for secondary outcomes

Outcome	Risk	Intervention	Baseline (T_0) M (SE)	T_1 M (SE)	T_2 M (SE)	p value T_0 vs. T_1	p value T_1 vs. T_2	p value T_0 vs. T_2
IAPT score	Low	Control	4.98 (0.24)	5.15 (0.31)	5.34 (0.32)	1.000	1.000	.545
		Trait-focused	5.06 (0.24)	4.93 (0.30)	4.62 (0.31)	1.000	.753	.294
	High	Control	8.66 (0.50)	8.40 (0.67)	8.30 (0.68)	1.000	1.000	1.000
		Trait-focused	7.10 (0.49)	7.32 (0.61)	6.19 (0.63)	1.000	.104	.259
AUDIT score	Low	Control	6.09 (0.26)	5.66 (0.29)	5.52 (0.27)	.079	1.000	.004
		Trait-focused	6.38 (0.26)	5.82 (0.29)	5.48 (0.27)	.009	.128	<.001
	High	Control	6.60 (0.53)	6.44 (0.61)	5.81 (0.57)	1.000	.117	.117
		Trait-focused	7.30 (0.52)	6.36 (0.57)	6.83 (0.54)	.028	.474	.497
DUDIT score	Low	Control	1.03 (0.16)	1.19 (0.19)	1.21 (0.19)	.822	1.000	.767
		Trait-focused	1.06 (0.16)	1.02 (0.19)	1.03 (0.19)	1.000	1.000	1.000
	High	Control	1.82 (0.33)	1.29 (0.40)	1.42 (0.41)	.264	.664	.664
		Trait-focused	1.52 (0.32)	1.80 (0.37)	1.77 (0.37)	.946	1.000	1.000
EDDS score	Low	Control	5.25 (0.17)	4.90 (0.21)	4.83 (0.23)	.051	1.000	.041
		Trait-focused	5.08 (0.18)	5.09 (0.21)	5.04 (0.23)	1.000	1.000	1.000
	High	Control	8.06 (0.36)	7.24 (0.44)	7.53 (0.49)	.027	.468	.468
		Trait-focused	8.25 (0.35)	7.33 (0.41)	7.26 (0.45)	.003	1.000	.007
WHOQOL	Low	Control	16.17 (0.11)	16.13 (0.13)	15.89 (0.14)	1.000	.136	.063
Physical		Trait-focused	16.11 (0.11)	15.93 (0.13)	16.13 (0.14)	.267	.247	1.000
Health	High	Control	13.51 (0.23)	13.05 (0.28)	13.19 (0.30)	.190	.652	.652
		Trait-focused	13.70 (0.22)	13.83 (0.26)	14.21 (0.28)	1.000	.294	.082
WHOQOL	Low	Control	13.82 (0.18)	13.75 (0.22)	13.87 (0.24)	1.000	1.000	1.000
Social		Trait-focused	14.04 (0.18)	14.19 (0.21)	14.32 (0.23)	1.000	1.000	.544
Relationships	High	Control	10.91 (0.36)	10.15 (0.47)	10.16 (0.51)	.166	.314	.314
		Trait-focused	11.74 (0.35)	11.58 (0.43)	11.67 (0.46)	1.000	1.000	1.000

Outcome	Risk	Intervention	Baseline (T_0) M (SE)	T_1 M (SE)	T_2 M (SE)	p value T_0 vs. T_1	p value T_1 vs. T_2	p value T_0 vs. T_2
WHOQOL Environment	Low	Control	15.21 (0.11)	15.13 (0.14)	15.03 (0.15)	1.000	1.000	.478
		Trait-focused	14.90 (0.11)	14.91 (0.14)	15.03 (0.14)	1.000	.919	.869
	High	Control	13.38 (0.22)	13.43 (0.30)	13.19 (0.31)	1.000	1.000	1.000
		Trait-focused	13.25 (0.22)	13.38 (0.28)	13.46 (0.28)	1.000	1.000	1.000
FMPS Concern over Mistakes	Low	Control	23.76 (0.34)	24.34 (0.39)	24.42 (0.43)	.179	1.000	.192
		Trait-focused	23.83 (0.34)	24.16 (0.38)	23.47 (0.42)	.824	.063	.892
	High	Control	33.98 (0.69)	33.27 (0.83)	33.41 (0.92)	.849	1.000	1.000
		Trait-focused	33.91 (0.68)	33.24 (0.77)	32.41 (0.84)	.784	.463	.087
FMPS Personal Standards	Low	Control	24.94 (0.25)	24.51 (0.28)	24.67 (0.30)	.127	1.000	.882
		Trait-focused	24.63 (0.25)	24.58 (0.28)	24.13 (0.30)	1.000	.099	.122
	High	Control	26.70 (0.51)	26.10 (0.60)	26.84 (0.64)	.586	1.000	1.000
		Trait-focused	26.94 (0.49)	26.11 (0.56)	25.94 (0.59)	.131	1.000	.122
FMPS Doubts about Actions	Low	Control	10.35 (0.15)	10.93 (0.21)	10.98 (0.22)	.004	1.000	.004
		Trait-focused	10.55 (0.16)	11.03 (0.20)	10.76 (0.22)	.022	.432	.814
	High	Control	15.58 (0.32)	15.12 (0.44)	15.42 (0.47)	.710	1.000	1.000
		Trait-focused	15.46 (0.31)	15.27 (0.41)	15.11 (0.43)	1.000	1.000	1.000
RSES Self-esteem	Low	Control	20.06 (0.26)	19.64 (0.30)	19.72 (0.33)	.187	1.000	.546
		Trait-focused	20.09 (0.26)	19.98 (0.30)	19.82 (0.32)	1.000	1.000	.833
	High	Control	12.31 (0.53)	12.58 (0.63)	12.38 (0.69)	1.000	1.000	1.000
		Trait-focused	11.36 (0.52)	11.82 (0.59)	12.14 (0.64)	.851	1.000	.331

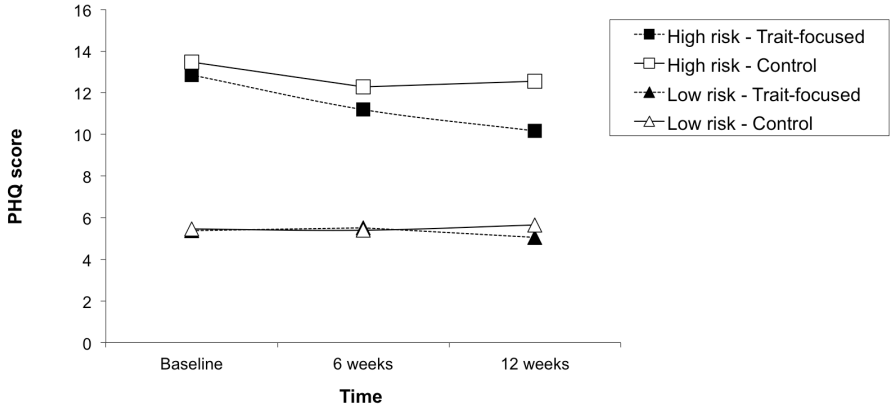

Figure 5.4: Estimated means of PHQ scores by risk and intervention

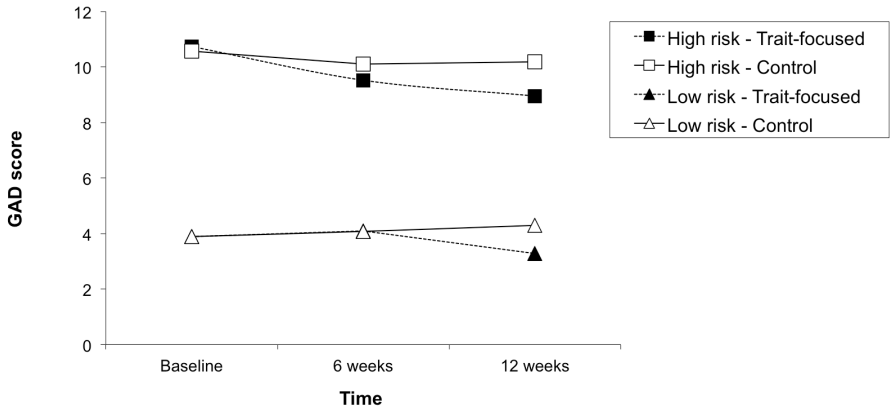

Figure 5.5: Estimated means of GAD score by risk and intervention

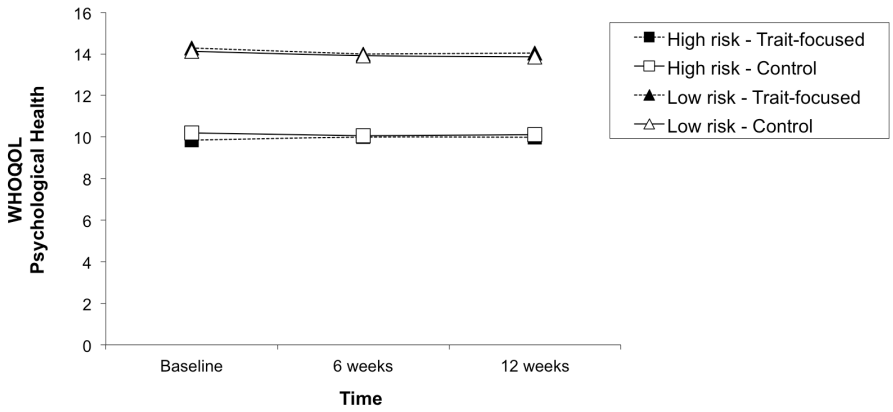

Figure 5.6: Estimated means of psychological health by risk and intervention

5.6.7 Primary Outcomes

With regard to depression as assessed by the PHQ, a significant main effect for time was observed, suggesting that depression changed over the course of the study regardless of which intervention students received or whether at high or low risk. A significant interaction between intervention group and time as well as between intervention group, risk and time was found, suggesting that the different interventions produced different effects and that the effect was dependent on the risk status of the student. The contrasts revealed that an intervention effect was only present in students at high risk that received the trait-focused intervention. In this group, depression reduced significantly from baseline to T_1, but not from T_1 to T_2.

The second primary outcome was anxiety as assessed with the GAD. For this variable, no significant main effects or interactions were observed. The analysis of contrasts showed that anxiety was reduced from T_1 to T_2 in students at low risk that received the trait-focused intervention. In students at high risk that received the trait-focused intervention, anxiety at T_2 was significantly lower than at baseline. The change in this group from baseline to T_1 was not significant although a trend was observed.

Finally, The Psychological Health domain of the WHOQOL comprised the third primary outcome. Again, no significant main effects or interactions were observed. The contrasts suggest that students at low risk that received the trait-focused intervention, reported significantly lower Psychological Health at T_1 than at baseline.

5.6.8 Secondary outcomes

With regard to scores on the IAPT phobia scales, interestingly a significant interaction between time and intervention group was found. Regardless of risk, phobia-related avoidance was reduced after receiving the trait-focused intervention. In students at high risk, this reduction was larger. However, none of the contrasts reached significance. Common mental disorders in students also include substance and alcohol use disorders and eating disorders. To investigate whether the intervention affected drinking patterns or drug use behaviour, mixed models were conducted for the AUDIT and DUDIT score. A significant time effect, but no other interaction effects were found for the AUDIT score. The individual contrasts revealed that students at low risk that received

either intervention, reported lower drinking behaviour at T_2 compared to baseline. In students at low risk that received the trait-focused intervention, the reduction in AUDIT scores is already significant at T_1. Students at high risk reported lower drinking levels at T_1 after receiving the trait-focused intervention. No changes were observed regarding the DUDIT scores. On the EDDS symptom composite, a significant time effect and three-way interaction were observed. It appeared that the stress intervention reduced disordered eating at T_1 regardless of risk. The trait-focused intervention reduced disordered eating only in students at high risk. It has to be noted that eating disorder symptoms were also reduced in students at low risk that received the control intervention. However, the reduction was smaller than in students at high risk that received the trait-focused intervention and that the group of students at low risk contains almost four times the number of students. This makes it likely that small changes reach significance. No significant changes were observed on the subscales of the WHOQOL. Although a time by group interaction was observed on the Physical Health and Social Relationships subscale, no differences emerged in the contrasts.

As the trait-focused intervention includes a module on how to deal with perfectionism, it was investigated whether students' perfectionism as assessed with the FMPS changes over the course of the intervention. On the Concern over Mistakes subscale of the questionnaire, no significant main effects or interactions were observed. However, the contrasts revealed no significant differences between the time points in any subgroup of students. Although, a significant effect of time was observed with regard to Personal Standards, no differences between time points emerged in the contrasts. On the Doubts about Action subscale, results of the contrasts suggest that students at low risk reported higher doubts about action at T_1, regardless of what intervention they received. Another modules of the trait-focused intervention addressed self-esteem. No significant main effects or interactions were observed on this scale. Another module in the trait-focused intervention addressed low self-esteem. No significant main effects or interactions were observed with regard to self-esteem.

5.6.9 Completer analysis

Considering the large proportion of dropouts in this study, mixed models were computed for complete cases only to investigate whether the dropout affected the

results. Hence, only students with data for all three assessments were included in this analysis. The results were identical to the ones presented above with regard to the main effects, interactions and contrasts.

5.6.10 Uptake and acceptability

Having completed all three assessments, students later received a brief questionnaire to provide feedback on the intervention and website. Of 401 students, who fully completed the study, 170 provided feedback on the intervention. Table 5.11 shows the result of the questions on the questionnaire feedback, module use, website usability and design.

With regard to the questionnaire feedback, students found the feedback easy to understand and helpful. On a seven-step rating scale ranging from "very difficult to understand" (1) to "very easy to understand" (7), the median score was 6. In terms of the helpfulness of the feedback the median score was 5 on a seven-step rating scale ranging from "not helpful at all" (1) to "very helpful" (7). Of the 170 students who provided feedback, 58.8 per cent indicated that they completed the online modules. To the question of whether the website was easy or difficult to use, students reported a median score of 6 on a seven-step rating scale ringing from "very difficult" (1) to "very easy" (7). In terms of to what extent students liked the design of the website, a median score of 5 on a seven-step rating scale ranging from "not at all" (1) to "very much" (7) was reported. In summary, most students reported positively on their experience on the website, experienced the feedback as comprehensible and helpful, and found the website appealing and easy to use.

Figure 5.8 and Figure 5.7 show the perceived helpfulness of both interventions. The data are based on only few individuals, as many students either indicated not having completed the modules or claimed they didn't have the module. This was an option, as students received a universal feedback form, which was not tailored to the intervention group. The majority of students found the modules "a little helpful" or "very helpful". Within the control intervention the finance tips and time management modules were perceived as most helpful. In the trait-focused intervention, the modules on worry, self-esteem and perfectionism were perceived most helpful.

Figure 5.9 and Figure 5.10 show the completion rates for each intervention. It is noticeable that in the trait-focused intervention, about half of the students completed the modules, whereas most students complete the modules in the control intervention.

In addition to the rating scales on the feedback and intervention, students had the opportunity to provide open feedback about what they liked or disliked about the intervention, or what they would like to have improved.

When asked about what students liked about the intervention, many commented that the feedback helped them to reflect on their thoughts and behaviour. Some students reported finding the information of the modules useful and easy to understand. Similarly, students mentioned that the feedback was easily comprehensible and particularly liked the normative component of the feedback. Some students described that the modules were not patronizing, dry or academic, but informative. Many students commented that they found the trait aspect of the intervention interesting and useful.

Students were also asked to provide information on what they disliked and many students reported finding answering the questionnaires too repetitive. Others commented that the feedback was too generic, too short or did not relate to their responses. There was a large proportion of students who would have wanted ipsative feedback in order to be able to compare their results over time. In terms of the modules, students' feedback suggested that they were not tailored to the individual, contained information that was already known to students, that the information in the modules was not applicable to them or required too much effort. Furthermore, students commented that the modules didn't include enough interactive elements such as email reminders with specific techniques. With regard to the usability and the design of the website, students commented that the questionnaire feedback was easy to overlook and could not be accessed at a later stage. Furthermore, some students mentioned that the modules were hard to find or to navigate.

Table 5.11: Usability feedback summary

Question		*N* (%)
The feedback was...		
...very difficult to understand	1	0 (0.0%)
	2	0 (0.0%)
	3	4 (2.4%)
	4	12 (7.1%)
	5	26 (15.3%)
	6	73 (42.9%)
...very easy to understand	7	55 (32.4%)
How helpful did you find the feedback to your questionnaire responses?		
Not helpful at all	1	3 (1.8%)
	2	14 (8.2%)
	3	21 (12.4%)
	4	35 (20.6%)
	5	40 (23.5%)
	6	41 (24.1%)
Very helpful	7	16 (9.4%)
Did you work through any of the student modules?		
	No	70 (41.2%)
	Yes	100 (58.8%)
How difficult or easy was the website to use?		
Very difficult	1	0 (0.0%)
	2	0 (0.0%)
	3	6 (3.5%)
	4	5 (2.9%)
	5	25 (14.7%)
	6	76 (44.7%)
Very easy	7	58 (34.1%)
How did you like the design of the website?		
Not at all	1	1 (0.6%)
	2	5 (2.9%)
	3	14 (8.2%)
	4	29 (17.1%)
	5	58 (34.1%)
	6	45 (26.5%)
Very much	7	18 (10.6%)

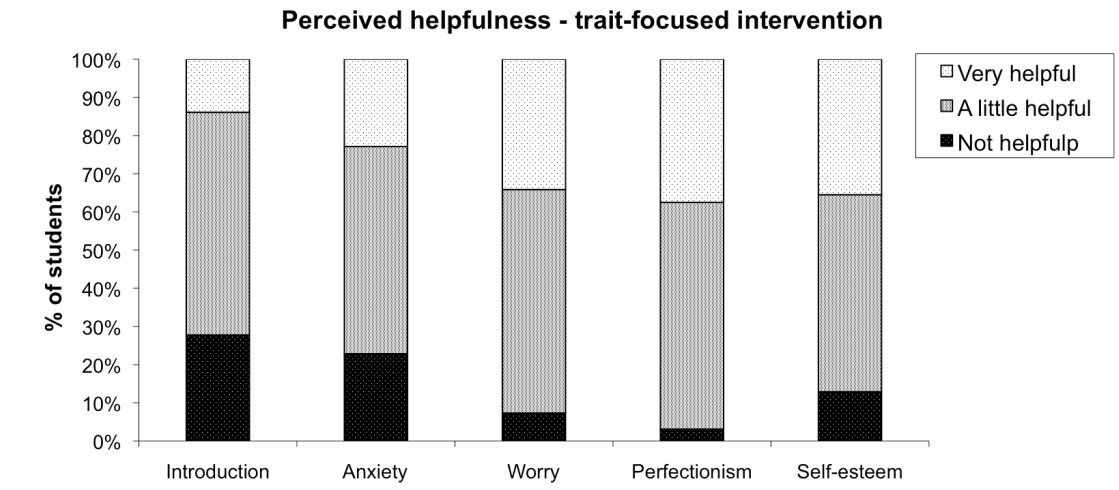

Figure 5.7: Perceived helpfulness of the trait-focused intervention

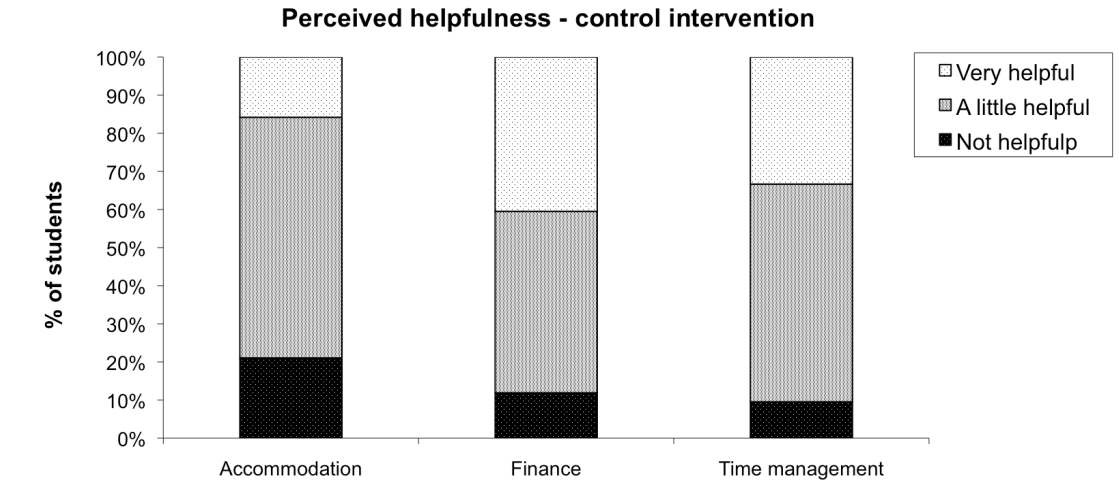

Figure 5.8: Perceived helpfulness of the control intervention

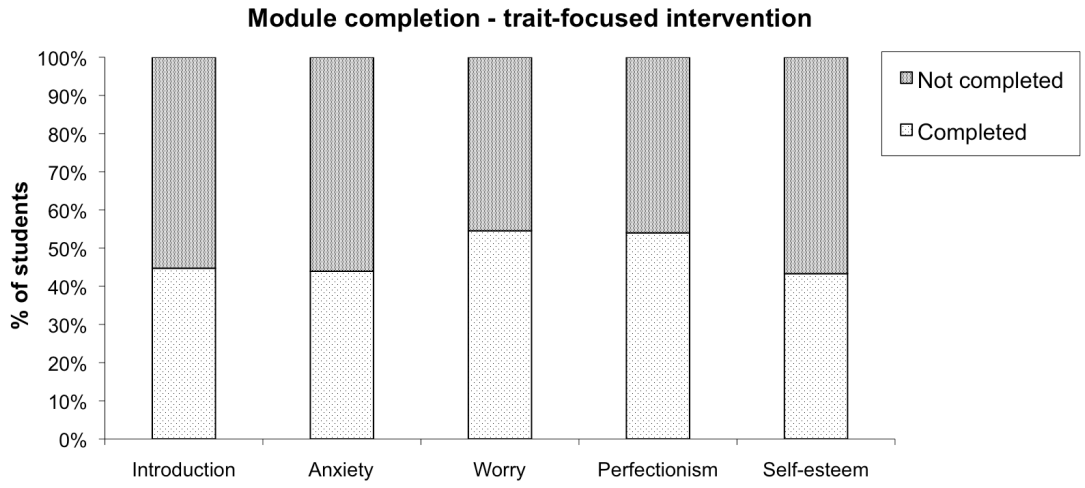

Figure 5.9: Completion rates for the trait-focused intervention

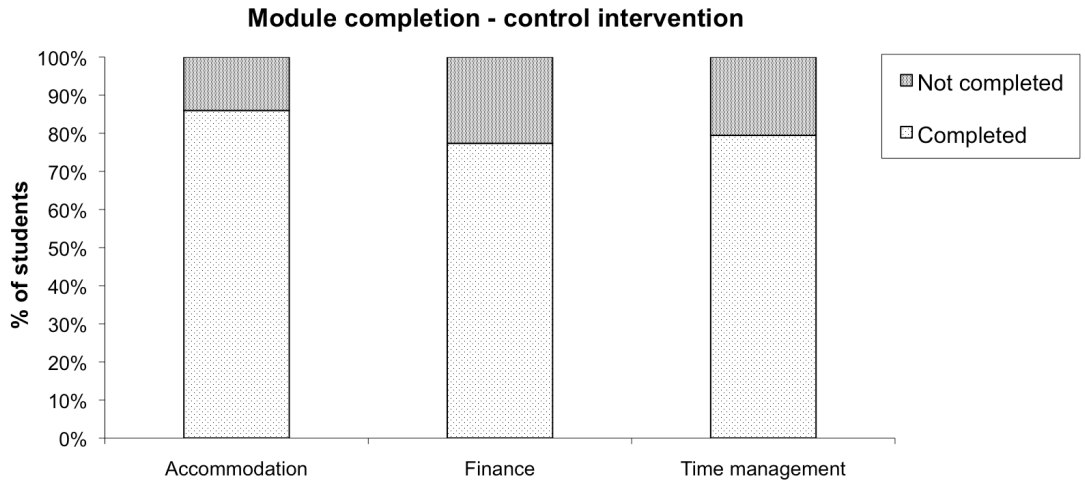

Figure 5.10: Completion rates for the control intervention

5.7 Discussion

The method of classifying students into high risk and low risk according to their personality seemed to be a successful approach. With only four personality variables, which were taken from different personality questionnaires, students were grouped into distinct groups with different mental health characteristics. The threshold for when a student was considered at risk had to be lowered in this study compared to the first study, as the resulting percentage at the usual 0.5 cutoff appeared to be too low. A number of sample and study characteristics could explain this finding. First, in contrast to the previous study, all students who completed all three assessments received a voucher. This may have attracted a larger number of students (as reflected in the

recruitment numbers) and a more heterogeneous group of students. Second, the previous study was advertised to students as a study on strengths and weaknesses with an emphasis on the feedback students would receive. Again, this may have attracted students with an interest in personality or mental health. On balance it is likely that the student sample in the previous study included more students at high risk, which justifies adjusting the cutoff in the logistic regression model.

Regarding personality differences, between students at high risk and students at low risk, this study largely confirmed the results found in the study on personality risk factors and mental health in students presented earlier in this thesis (see Chapter 2). Students at high risk for developing mental health problems showed higher levels of perfectionism on all domains. On the subscales of the NEO, students at risk reported higher Neuroticism, lower Extraversion, Conscientiousness, and Agreeableness. In contrast to the previous study, no differences on the Openness subscale were observed in this study. With regard, to the dimensions of the SURPS, this study found differences between students on Anxiety Sensitivity and Introversion/Hopelessness, which is in line with results from the previous study (see Chapter 2). In addition, students differed on Impulsivity.

In the present study, it was hypothesised that compared to students in the control group, students would report lower depression, anxiety and higher Psychological Health after having received the trait-focused intervention. This hypothesis was mainly confirmed. With regard to depression, a main effect of time was observed as well as an interaction between intervention group and time. Depression levels declined in the trait-focused intervention group, whereas they remained constant in the control group. In the trait-focused intervention group, only students at high risk reported significantly lower depression scores after the intervention. No significant three-way interaction was found with regard to anxiety. Students that received the trait-focused intervention showed reduced anxiety, though at different times of assessment for high risk and low risk students. Students at low risk reported lower anxiety at the first follow-up, compared to baseline, whereas in students at high risk, anxiety was significantly lower at the second follow-up, compared to baseline. No general effect of the trait-focused intervention on Psychological Health was observed.

The second hypothesis was that students at high risk would benefit more from the intervention than students at low risk. This hypothesis was mainly confirmed. On the primary outcomes of depression and anxiety, the trait-focused intervention reduced depression and anxiety only in those students who were at high risk, suggesting that these students benefited most from the intervention. Due to the design of the study, the possibility of a regression to mean effect can be excluded, as students with the control intervention would have been affected similarly.

It became clear during the intervention and in the questionnaires on uptake and acceptability that many students did not start or did not complete the modules. Statistics on how many users have registered with the intervention and how many have started or completed individual modules was available to the primary investigator live on the website. It was noted that after several hundred students had registered that only a small percentage had worked through the modules. As a reaction the module titles in the trait-focused intervention were changed to include a brief and catchy description of the content. Furthermore, students received an email reminder asking them to look at the modules. However, the uptake of the intervention remained low throughout. One aspect of the trial that may explain this is the fact that both, students at high risk and students at low risk were asked to participate. That is, the format and content of the intervention may have had little appeal to students at low risk, whereas issues covered in the control intervention may be relevant to the majority of students. In addition, the present study necessarily contained a high number of questionnaires, which made the assessments lengthy and repetitive. The modules in the control intervention were significantly shorter than the modules of the trait-focused intervention. As students had the possibility to download each module as PDF file, it is possible that students in the trait-focused intervention downloaded the files and completed them offline, whereas students in the control intervention completed them online. However, it has to be noted that students that completed the modules mostly found them at least “a little helpful” or “very helpful”. The figures on completion rates presented earlier refer to students having fully completed the module. It is possible that some students did not fully complete the modules, but still benefited from parts of the content.

The open feedback from students on the personalised questionnaire feedback, the intervention, and the website was diverse. Whereas many students found the feedback very useful and easy to understand, others suggested that it was too generic and not helpful. Similar results were observed for the content of the modules, which was experienced as helpful by some and not helpful by others. Although it is not surprising that the format of the intervention may not be suitable for all students, it remains unclear which factors influenced the uptake and acceptability of the intervention. These factors would be important to investigate in future research, as they would allow for recruitment to be targeted to those students that benefit most from the intervention.

Feedback from students on the usability of the website and helpfulness of the modules and questionnaire feedback was only available from a subgroup of students that fully completed the study and later completed the feedback form. Hence, it is possible that these data are biased, as they would not capture if students dropped out due to poor usability of the intervention or the lack of perceived helpfulness. This issue highlights the importance of obtaining at least some usability feedback from users early in the process of intervention evaluation in e-health.

This intervention was the first trait-focused internet-based intervention addressing multiple common mental disorders in university students. In students at high risk, the intervention was able to reduce anxiety, depression, and symptoms of eating disorders, although the underlying mechanism of this remains somewhat unclear. In addition to anxiety, worry and low mood, the programme targeted perfectionism, self-esteem and unhelpful coping mechanisms such as drinking or drug use. On these outcomes, however, no changes were observed. One possible explanation for this is that anxiety and low mood are most commonly observed in student populations and these factors are easier to change and respond better to cognitive-behavioural techniques.

Nevertheless, the findings from this randomised controlled trial are encouraging. Particularly the fact that eating disorder symptomatology was reduced provides support for the idea of targeting personality risk factors to prevent common mental disorders in students. The findings from this study therefore extend the findings from previous intervention studies that demonstrated the effectiveness of programmes targeting anxiety and depression only. Disordered eating was not directly addressed by any of the

modules, which suggests that the observed changes are the result of changes on other domains. For example, it is possible that the reduction of depression and anxiety levels reduces the occurrence of unhelpful coping strategies, such as comfort eating or purging behaviours. In addition, the intervention reduced phobia-related avoidance in both intervention groups. No changes on drinking behaviour or drug use were observed, which is not surprising. In the present sample, only very few students reported using drugs resulting in a floor effect on the DUDIT scale. With regard to alcohol, no differences between students at high risk and low risk were observed at baseline and it is likely that drinking behaviour is heavily affected by external factors, such as the time of the year (e.g. exams times) or financial constraints. The fact that students at low risk reported lower drinking levels after receiving either intervention supports this idea.

Comparing the present intervention to other prevention programmes for students is difficult, as it followed a very different approach and targeted multiple disorders. Programmes such as "MoodGYM", "Student Bodies" and others are reported in the literature as at least partly effective. However, it is likely that addressing very disorder-specific issues in an affected subsample is easier than addressing more underlying factors as attempted in this study.

Feedback from the students on usability and uptake of the two interventions provided valuable insight into why the trait-focused (longer) intervention may not have been as effective as assumed and highlighted important issues for internet-based interventions in students. One is that it seems hard to engage students in working through the trait-focused self-help material and only about 50 per cent of students completed the modules. In contrast, the completion rate of the shorter control intervention was much higher, suggesting that brevity is important in designing web-interventions. It also has to be noted that the number of questionnaires in this study was high and that the length of the assessment may have contributed to the fact that a proportion of students did not further engage with the content. Moreover, the content of the control intervention modules may have had a higher appeal to students, as they targeted problems that are relevant to most students and which students themselves identified as being problematic.

5.7.1 Strengths

This study presented the first trait-focused internet-based intervention addressing common mental disorders in students and hence presented an innovative intervention with the potential of large impact. As the design was a randomised controlled trial, the evaluation was controlled for possible confounders allowing a valid evaluation of the efficacy. A large sample size was used and the intervention was administered to all students regardless of their risk status, which made it possible to examine whether the intervention can be used universally or would be better to be targeted to particular populations.

Another strength of this study was the inclusion of an active control group, which is in accordance with the guidance on the development of complex interventions by the Medical Research Council (Craig et al., 2008). The feedback from students on the perceived helpfulness was positive for both interventions. This suggests that despite the differences in length, content and format, the active control was a credible intervention for the randomised controlled trial. In addition, although the control intervention addressed issues that were identified by students, it produced no improvements with regard to students' mental health, which has important implications for the prevention of common mental health disorders in students, namely that addressing these common stressors may not be a viable route for preventing common mental disorders in students.

5.7.2 Limitations

One of the main limitations of this study is the relatively short follow-up period. It is possible that over time more students would have made use of the students modules and that the techniques taught in the modules take some time to induce change. On some outcomes, such as Concern over Mistakes of the FMPS or Physical Health of the WHOQOL, a trend was observed in students at high risk and in a longer follow up period, these changes might have reached significance.

Many students commented that the modules were not sufficiently targeted towards the individual and suggested that the questionnaire feedback could have been combined with instructions on which modules to take or that the module content could be more tailored towards each individual. Another limitation was that feedback on the

intervention was only obtained from individuals that fully completed the intervention making it likely that the information assessed was biased.

In the present study, no structured interviews or other diagnostic tools were used to assess whether students fulfill the criteria for common mental disorders. Hence, it was not possible to assess how many people are affected by a disorder at clinical severity and whether the intervention worked differently in those students.

5.8 Summary

This chapter presented the first randomised controlled trial of an internet-based trait-focused prevention programme targeting common mental disorders in students. Students were classified into high and low risk using four personality dimensions. The intervention reduced depression, anxiety, phobia-related avoidance and eating disorder symptoms in students at high risk. The findings provide encouraging support for targeting common mental disorders in students by targeting underlying personality risk factors.

Chapter 6- Discussion

6.1 Chapter scope

The overall aim of this thesis was to develop and evaluate an internet-based trait-focused prevention programme for common mental disorders in students, such as depression, anxiety disorders, substance use disorders and eating disorders. This chapter presents the general discussion of the results across the different studies presented in this thesis. After a summary of the main findings by chapter, the results are discussed in the context of the existing literature and with regard to the general research questions that this thesis aimed to address. Strengths and limitations of the studies presented in this thesis are discussed. The chapter ends with the clinical implications of the results and future research directions.

6.2 Overview of the results

In the first chapter, the literature on student mental health, personality risk factors and existing efforts in preventing common mental disorders in students were reviewed. Students seemed to be most commonly affected by depression, anxiety, substance use disorders and eating disorders. Research on higher order personality factors, such as the Big Five, suggested that particularly high neuroticism and introversion might contribute to the development of common mental disorders. Amongst lower order personality factors with a potential link to the development of mental disorders are anxiety sensitivity, perfectionism, impulsivity and sensation seeking. Efforts have been made to develop internet-based intervention targeting common mental disorders in students, but few programmes demonstrated promising results and these programmes generally only target single disorders.

The first empirical study of this thesis investigated symptoms of common mental disorders in students and personality risk factors associated with these symptoms. Students from two large universities in London were invited to complete several online questionnaires, which included measures on personality and psychological and behavioural self-report measures. A cluster analysis was performed on symptoms and two clusters of students emerged. One cluster included the majority of students (80 per cent), who did not report any symptoms of mental disorders. The remaining students reported higher levels of anxiety and depression, more problem drinking, lower self-

esteem and lower quality of life on several domains. These students formed a group considered to be at high risk for developing common mental disorders. The two groups were compared on personality variables and students at high risk reported higher levels of perfectionism, higher trait anxiety, lower Extraversion, high anxiety sensitivity and higher Introversion/Hopelessness. A logistic regression aiming to identify the best personality predictors for risk found that Concern over Mistakes, Doubts about Actions, Neuroticism and Introversion/Hopelessness best predicted risk.

Using focus groups and an internet-based survey, the second study investigated students' needs when it comes to mental health problems at university. In a web survey conducted with the student sample from the first study, students were able to indicate what they experienced as being the biggest challenges for students during the first year and whether they currently felt troubled by something. In addition three focus groups were conducted asking students about challenges and possible ways of supporting them. Results from the survey and the focus group suggested that students experience social challenges, practical and academic challenges as being distressing during the first year at university. The most commonly experienced issues concerned relationships, health and academic issues. Students at high risk for mental health problems were more likely to be troubled by emotional issues. Results from the focus groups confirmed these challenges as being important.

Based on the findings from the two studies, an internet-based cognitive behavioural trait-focused intervention targeting common mental disorders in students was developed in collaboration with students and experts in the field. The intervention consists of modules based on the five areas assessment approach (Williams & Garland, 2002) and targeting high perfectionism, anxiety and worry, difficult emotions and low self-esteem. Based on the results from the focus group study, an active control intervention was developed including advice on accommodation, money saving and study skills.

The final study investigated the efficacy of the trait-focused intervention in a randomised controlled trial with students from two large London universities. Students completed several questionnaires on personality and psychological wellbeing and were randomised to either receive the trait-focused intervention or the control intervention.

Results on the personality scales were used to group students into high and low risk for developing common mental disorders, following the results from the first study. This grouping was successful and two student groups were created that differed significantly on several indicators of psychological health. Students at high risk that received the trait-focused intervention showed reduced depression and anxiety and lower disordered eating compared to students that received the control intervention.

The main aim of this thesis was to develop and evaluate an internet-based trait-focused prevention programme for common mental disorders in students. In order to achieve this, a secondary aim was to identify personality risk factors that are associated with the development of such disorders.

6.3 Which personality risk factors predict common mental disorders in students?

In the first study of this thesis, personality risk factors and their associations with student mental health were investigated. A cluster analysis by symptomatology revealed that students could be grouped into two clusters, one cluster of students at low risk for developing mental disorders and one cluster of students at high risk, who show early symptoms of a range of disorders. Differences in personality between the clusters were observed in that students at high risk showed higher levels of Neuroticism, lower Extraversion, higher Openness to Experience, lower Agreeableness and lower Conscientiousness. On the domains of perfectionism, students at high risk reported higher Concern over Mistakes, higher Personal Standards and higher Doubts about Actions. With regard to the subscales of the SURPS, students at high risk showed higher Anxiety Sensitivity and higher Introversion/Hopelessness. In isolation, these results are not surprising, as previous studies have already associated several personality factors with mental health problems. However, it is important to note that these results add support to the content of the current intervention and provide further evidence for the role of personality in the development of mental disorders in students. The personality traits targeted by the intervention are the result of previous research on personality and mental health and the research presented in this thesis, which combined aspects of previous studies.

Particularly the relationship between high levels of Neuroticism and mental health has been subject of many studies, which suggest that Neuroticism increases the risk for depression and anxiety disorders (Clark et al., 1994), eating disorders (Miller et al., 2006) and substance abuse (Dubey et al., 2010). The findings from this thesis also provide support for the association between perfectionism and anxiety symptoms. Similar to the study by Antony et al. (1998), Concern over Mistakes and Doubts about Actions were associated with higher levels of anxiety.

However, the novelty of the presented studies lies in the combination of personality measures used and the attempt of classifying students' risk status by personality. The results suggested that it is the combination of personality risk factors that can make students particularly vulnerable to the development of common mental disorders. In this case, high trait anxiety, perfectionism and Introversion/Hopelessness as assessed with the SURPS were the best predictors for the risk status. Students scoring highly on all four domains seem more prone to symptoms of common mental disorders. In the student sample of the randomised controlled trial, these results were confirmed and students could be classified using the personality factors described above. It is important to note that the differences between high and low risk students are not confined to Neuroticism, perfectionism and Introversion/Hopelessness. Instead, differences were observed on numerous personality domains. The factors outlined above are only the factors with the most predictive value when it comes to detecting students at risk. In addition, it is possible that some of the personality risk factors are correlated with each other, which is not surprising considering that higher and lower order personality factors were assessed. This fact had not been addressed by previous research, which consequently may have overestimated the influence of single traits.

It is possible, that within specific disorders, more distinct personality differences can be observed, similar to the results of Conrod et al. (2000). However, in the studies presented in this thesis, the symptomatology of students at high risk did not suggest a particular disorder and it has to be noted that not all of those students will develop a mental disorder fulfilling the criteria of the DSM-IV. Hence it is not surprising that disorder-specific personality risk factors were not identified.

In summary, the studies in this thesis demonstrate that a considerable proportion of students can be considered at high risk for developing mental health problems. Although their symptoms are below the threshold for a DSM-IV classification, they present a population that is affected by symptoms of mental health problems and reports experiencing reduced quality of life. The first study quantitatively looked at the mental health symptoms in relation to personality; the second study supported the results by addressing the subjective experience of these symptoms. Several personality factors were correlated with symptoms of mental disorders in the presented studies. Of these, perfectionism, Neuroticism and Introversion/Hopelessness best predicted symptomatology.

6.4 How do the results fit within the existing literature of mental health prevention in students?

Comparing the results from the randomised controlled trial presented in this thesis is difficult, due to the lack of such studies and the novelty of the intervention. The trait-focused internet-based intervention developed and evaluated here significantly reduced depression and anxiety in students at high risk for developing mental health problems. It is interesting to note that similar to the results from other prevention programmes for anxiety or depression, the two problems not only commonly occur together, but also can be targeted in a combined intervention. Cukrowicz and Joiner (2007) targeted depression in an intervention for students and were able to reduce depression and anxiety. Similar results were found in a study by Kenardy et al. (2003), who targeted anxiety and reported reduced depression and anxiety after the intervention. The observed reduction in eating disorder symptomatology observed in the intervention was somewhat surprising, as the intervention targets this area only indirectly (in the section on unhelpful coping behaviours). Existing preventative intervention aiming to reduce eating disorder symptoms have often struggled to achieve results, unless only students at high risk were included (e.g. Zabinski, Celio, Jacobs, Manwaring, & Wilfley, 2003). Nevertheless, the changes observed in the present trial were not confined to students at high risk receiving the trait-focused intervention. Changes were also observed in students at low risk that received the control intervention. Hence, it remains unclear whether the changes can be attributed entirely to the intervention. Furthermore, a

different eating disorder self-report measure was used than in most of the existing eating disorder prevention studies, which may be more sensitive to fluctuations in eating behaviour. In the presented trial, no changes were observed with regard to drinking behaviour and drug use. Although students at low risk reported lower alcohol use at the third assessment, the changes were observed in both intervention groups, suggesting that external effects accounted for the results. A review of the literature on drinking prevention in students (Walters & Bennett, 2000) suggested that interventions addressing skills and attitudes and providing personalised feedback are most effective. Although the focus of the intervention was specifically not on reducing drinking, it did include elements that could change attitudes to drinking (as an unhelpful coping mechanism), provided alternative skills (e.g. for dealing with difficult emotions) and personalised feedback on drinking. Hence, the lack of finding is somewhat surprising.

6.5 The present studies within the MRC framework for complex interventions

In their framework for the development of complex interventions, the Medical Research Council (Craig et al., 2008) suggested a cyclical four-step approach for the development, evaluation and implementation of interventions. The first stage is the development stage in which the evidence base is identified, a theory is developed and the process and outcomes are modelled. In the feasibility and piloting stage, procedures are tested and recruitment and sample sizes are determined. In the evaluation stage, the effectiveness and cost-effectiveness are investigated. The dissemination stage includes disseminating the intervention with long-term follow-ups and monitoring. This thesis mainly covered the first three stages of developing an internet-based intervention for university students. In the introduction, the literature in the field was examined to identify the evidence base. The first study investigated personality risk factors and mental health and contributed to establishing the evidence base, developing a theory, testing the assessment battery for detecting students at high risk and determining the proportion of students at high risk. Similarly, the focus group and web-survey study contributed to the development of the intervention. The randomised controlled trials falls somewhere between the evaluation stage and the feasibility stage. Figure 6.1 shows the stages of the framework and how the presented chapters addressed the different stages.

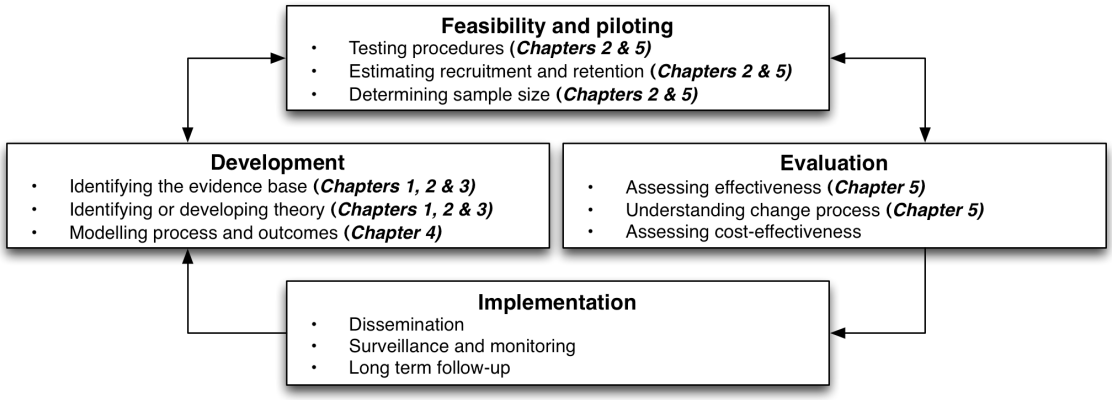

Figure 6.1: The chapters of this thesis within the MRC framework for complex interventions (Craig et al., 2008)

In line with the recommendations by the framework, the second study investigated students' mental health needs using focus groups and an online-based survey. The results suggested that students experience social challenges, such as building new social networks, practical challenges, such as living on a limited budget or accommodation and academic challenges, such as the use of new learning techniques as the most significant challenges during the transition to university. It was argued that an internet-based intervention could address practical challenges and academic challenges, but not social challenges. To address this, an active control intervention for the randomised controlled trial was developed, which included modules on accommodation, finances and study skills. However, students that received the control intervention showed no improvements on primary or secondary outcomes in the randomised controlled trial. Although the length of the control intervention modules was considerably shorter than the length of the modules in the trait-focused intervention, it is unlikely that this fact alone accounts for the lack of any effects. In the feedback on the intervention, students evaluated the helpfulness of the modules at levels that compare to the trait-focused intervention, particularly the modules on finances and study skills. In addition, the modules in the control groups were completed by more students suggesting that the observed effects cannot simply be attributed to a difference in intervention intensity. Hence, it can be concluded that although students experience practical and academic issues as challenging, supporting students with these issues does not improve mental health outcomes. In the framework of this study it seemed that students identified areas in which intervening with a web-based programme is either not practical (such as issues around building a new social network) or does not lead to the desired effects. By no

means, should this suggest that the issues identified by students are not relevant for the prevention of common mental disorders. With regard to the vulnerability-stress model discussed in the beginning of this thesis, it is possible that mainly addressing these stressors is not sufficient to ultimately improve mental health. In addition, the control intervention was not based on a specific treatment model and compared to the trait-focused intervention was much less interactive. It remains unclear, what effect the control intervention had on students, as the outcomes primarily focused on the psychopathology of common mental disorders in students and did not, for example, assess perceived stress.

In summary, one of the important findings of this thesis is that an intervention aimed at improving the mental health of students needs to address vulnerability factors in students at higher risk for developing common mental disorders. Many universities and student organisations provide online material on practical issues such as those surrounding money, housing or university specific issues, but the results suggest that content has to go beyond this information to assure greater wellbeing in students.

6.6 Limitations of studies in this thesis

6.6.1 Sampling population

All students, who participated in any of the studies in this thesis were recruited from two large London universities, namely King's College London and University College London. Choosing students from the same universities for the web-based study on personality and mental health and later for the randomised controlled trial was essential to assure that the procedure for identifying students at high risk is applied to a similar sample as the one with which it was developed. However, the sampling from only these two London universities inevitably has major implications for the generalisability of the results. First, it is possible that the procedure for detecting students at high risk does not fully apply to other samples, particularly those universities with, for example, different cultural or socio-economic backgrounds. The different recruitment techniques used in the first study of this thesis and then in the intervention evaluation already demonstrated that small differences between the samples affect the proportion of students at high risk. Here, modifying the threshold helped to ensure that the estimated

proportion of students at high risk was met. In other samples, the combination of personality risk factors and the weights of each factor may be different. Both studies, the web-based study and the intervention trial, suggested that differences between high risk and low risk students are not confined to the factors used in the logistic regression model. Hence, it is possible that in other populations, other risk factors would serve as better predictors for risk.

6.6.2 Gender

In all three studies of this thesis, participants were primarily female. This is somewhat surprising as both universities used for recruitment have an approximately equal proportion of male and female students and suggests that female students were more attracted by the nature of the study. Considering that female students are at higher risk for developing mental disorders, this affects the proportion of students at high risk and therefore the accuracy of the detection method proposed. It also limits the generalisability of the findings with regard to the efficacy of the intervention.

6.6.3 Follow-up period

Due to time constraints during the randomised controlled trial, a follow-up period of twelve weeks was chosen. Considering this was the first study of this kind, this allowed investigating the immediate effects of the intervention and ensured that data were available from as many students as possible. However, overall this period was relatively short for a cognitive-behavioural intervention. To complete the study, students were not forced to look at or complete the intervention modules. Hence, students could complete the intervention in their own time, which is why the comparison between baseline and the 12-weeks follow up was considered the most important one. Over time more students might have accessed and completed the intervention, resulting in higher overall effects and intervention completer rates. In addition, it is possible that some of the techniques suggested in the intervention need more time to induce measurable changes in attitudes, behaviour and wellbeing. This flexibility for the students provided valuable information on the feasibility of this intervention at the compromise of potentially underestimating the effectiveness.

6.6.4 Targeted disorders

The intervention presented in this thesis was the first intervention for students addressing multiple mental disorders by targeting underlying personality risk factors. Although the disorders chosen to be addressed were the result of an extensive literature review, they do not represent the full spectrum of disorders that can affect students. Hence, the focus of the psychological measures used in the study on students' mental health and personality had a strong focus on the disorders outlined in the introduction, namely depression, anxiety disorders, substance use disorders and eating disorders. It is possible that the results on personality risk factors predicting risk would look different, had more disorders been taken into account. This also applies to the intervention. Although the programme targets the most common mental disorders and therefore has the potential to improve the mental health of the largest proportion of students, it is unlikely to be suitable for a minority affected by or at risk for other disorders, such as personality disorders or psychotic disorders.

6.6.5 Confounding variables

Despite randomisation and the inclusion of students at high and low risk, it is possible that the results of the studies in this thesis are influenced by additional variables, which were not assessed. It is known that the issues identified in the second study of this thesis (see Chapter 3) particularly affect students immediately after transition to university. Particularly in the study on personality risk factors and student mental health, it remains unclear whether the time of the year at which students were recruited may have affected the results, as depression and anxiety levels may be higher, such as prior to an exam. Recruitment for this study went over several months, but it is inevitable that most students participate immediately after receiving the recruitment email.

In the randomised controlled trial, students from University College London were recruited a few weeks later than students at King's College London. It is possible that there were differences between the two groups of students resulting from the time of recruitment. This may have affected the need of students for an intervention or the willingness and ability to participate in the study, for example, if the time of assessments was during holidays or exam periods.

6.6.6 Intervention piloting

As outlined above, students and experts provided feedback during the development of the intervention. However, due to time and technical constraints, little time was available to pilot the complete intervention in its web-based format with students. An extensive piloting stage of the intervention would have been helpful to assess the comprehensibility of the online feedback and the intervention, and the usability of the website. Feedback from students after completion of the randomised controlled trial provided interesting insight on how the intervention could be improved with simple measures (e.g. by increasing the visibility of the immediate feedback on the website). It is possible that the uptake of the intervention was affected to some extent by this short piloting phase.

6.7 Strengths of studies in this thesis

6.7.1 Transdiagnostic approach

One of the main strengths of this thesis is the novelty of the developed intervention. Whereas existing internet-based programmes for student mental health only target symptoms or risk factors of one disorder, this intervention aimed to reduce the risk for multiple common mental disorders. This was achieved by targeting personality risk factors that are associated with the development of these disorders. In this format, this is the first intervention of this kind and contributes significantly to the knowledge in the field of student mental health.

With the implementation of the programme in mind, the transdiagnostic approach has major advantages. Even though effective interventions for single mental disorders in students may exist, they can only address a small subpopulation affected by this particular disorder. In addition, identifying individuals becomes a balance between a conservative selection strategy to maximize the effect and minimize workload for the user, or a more liberal strategy to increase the reach of the programme. This may be feasible if a population is primarily affected by one disorder. However, the student population on the other hand is a population with a rather high proportion of a variety of sub-threshold mental disorders, and therefore targeting multiple disorders with one intervention is a more promising approach.

6.7.2 Intervention content

As outlined previously, students, who participated in these studies were London based students attending a major university. If the intervention content had included content tailored to university- and location-specific issues, such as information on accommodation and travel, the intervention would not be of any use for students outside this context, such as those based in a different city. However, the developed intervention focused on personality risk factors that are well established with regard to the development of common mental disorders in students. Hence, the intervention should be applicable across universities and cities and therefore can have a wide reach.

It should be noted that the intervention content is independent from the method used in detecting students at risk. Although there is overlap between the factors in the logistic model used to detect students at high risk and the content of the modules, the intervention partially targets different traits than the ones used to detect students at risk. This has the advantage that the even though the procedure of detecting students at high risk may not be fully optimised, the content of the intervention remains relevant.

6.7.3 Study methodology

Another major strength of this thesis was the combination of different methodologies used. In their recommendation for the development of complex interventions, the Medical Research Council (Craig et al., 2008) suggests involving users in the development of the intervention. This was achieved by using quantitative (web-survey) and qualitative techniques (focus groups). It was further recommended by the Medical Research Council to use randomised controlled trials with an active control for evaluating complex intervention, which was realised in this thesis. This had three important implications. First, this allowed for students to be blinded in the trial about randomization. In the recruitment material, students were told that after completing the questionnaires in the trial they would receive access to helpful online information for students. An unblinded design could have potentially deterred students from participating or evoked placebo effects. Second, this was the most ethical solution considering the high number of questionnaires students had to complete during the study. Both interventions contained information deemed relevant and helpful for students and randomisation did not automatically create disadvantages for the students.

Finally, the inclusion of an active control intervention allowed investigating whether any effects of the trait-focused intervention could be attributed to content. Although the control intervention was considerably shorter than the trait-focused, it is unlikely that the differences found between the interventions were solely due to length. The feedback from students on the control modules suggested that this intervention was a credible active control condition, despite its reduced length and lack of interactive elements. In a design with passive or waiting list control group, differences between the group at follow-up could have occurred due to the fact that one group had to spend a considerable time with the online material, whereas the other group did not. Additionally, this design allowed the investigation of whether an intervention addressing practical and academic issues improves student mental health. In the second study of this thesis, students' responses suggested that they experience social (e.g. making friends), practical (e.g. money) and academic (e.g. new learning techniques) issues as most challenging. Hence, the control module addressed these challenges resulting in an intervention that despite high popularity and acceptance by students produced no changes on mental health outcomes.

6.7.4 Sample size

A further strength of the studies presented in this thesis was the large sample size of the studies. Particularly in the randomised controlled trial, a very large student sample was recruited. This assured that the study was sufficiently powered, especially considering no assumption about possible effect sizes of the intervention could be made.

Additionally, this allowed getting valuable information on the feasibility and implementation of such an intervention, as it highlighted methodological or technical issues of internet-based trials in a student population. Surprisingly, the workload of managing such a high number of participants was low. Only during the recruitment period, a higher number of students made contact due to technical problems (browser configuration, network problems). Many of those emails were due to the fact that registration had to be closed after the maximum number of students had been reached. The high number of students made it easier to detect technical problems early in the process (such as problems with completing the questionnaires or feedback), particularly when numerous students report the same issue. It would have been easily possible to

conduct the randomised controlled trial with a much higher number of students, due to the high demand from students and the minimal workload. However, the number of students in the study had to be restricted due to limited funding and ethical approval.

6.8 Clinical implications

Considering that this thesis presented the first attempt of an internet-based trait-focused intervention, the results are encouraging. Students at high risk that received the trait-focused intervention showed improved mental health on some domains compared to students at high risk receiving the control intervention. The results have a number of important implications for student mental health.

6.8.1 Can multiple disorders be targeted in a single programme?

First, the results obtained suggest that it is indeed possible to target multiple disorders in one intervention. Previous programmes usually focused on one disorder and its symptomatology, or specific risk factors. With research suggesting that common mental disorders not only share some features, but also seem to have a shared aetiology, trying to address multiple disorders in one intervention seems sensible. It has to be noted that significant changes were not observed on all outcomes in the randomised controlled trial. This may be due to multiple reasons. Similar to the issues of universal versus targeted prevention (see below), the overall effect of an intervention is affected by the heterogeneity of the sample. As multiple disorders were addressed, it is possible that different aspects of the intervention (e.g. different modules) affected different mental health aspects (e.g. mood, eating behaviour) in students with different characteristics (e.g. personality). This also affects the methodology of the randomised controlled trial. Whereas studies focusing on one disorder can focus on very specific outcomes, the presented study had to assess several mental health aspects to assess the effect on the symptomatology of different disorders. On balance, the changes observed in students at high risk that received the trait-focused intervention, suggest that targeting multiple disorders is a viable approach. Students reported improvements that cover symptoms of depression, anxiety disorders (including generalised anxiety disorders and phobias) and eating disorders.

6.8.2 Should a trait-focused intervention be universal or targeted?

The second implication of the results revolves around the question of universal versus targeted prevention, an issue that has previously been identified in prevention research (e.g. Stice et al., 2007). Many prevention programmes have been shown to be only effective when targeting those at risk. Despite the methodological and statistical reasons for favouring targeted interventions, there are also many pragmatic aspects to consider. Delivering an intervention only to those who might benefit most from it can save resources, costs and time for providers and recipients. Targeted intervention can be more specific, as some characteristics of the user are already known. The challenge of targeted prevention lies in identifying and engaging the individuals to be targeted. Results from the randomised controlled trial of the intervention developed in this thesis support the idea that prevention for common mental disorders in students should target individuals at high risk. In the present study, significant effects of the intervention were only found in students at high risk. Although the lack of findings in the low risk students may in some instances be due to a floor effect, it is generally reasonable to assume that the intervention has a much higher relevance to students at high risk.

6.8.3 Can a trait-focused intervention be delivered through the internet

Finally, the third implication of the presented research concerns the delivery of a trait-focused intervention via the internet. The results of the trial in this thesis generally support the idea of delivering a health intervention, such as the one developed here, via the internet. Dropout in the randomised controlled trial was relatively high. However, it is important to note that this may be due to the fact that students were recruited regardless of whether they were at high or low risk and due to the lengthy assessments students had to complete in order to gain access to the modules. Considering that the trial conditions were not fully optimal in that sense, the uptake of the intervention was more than acceptable and within the range of what is to be expected for an internet-based intervention (Melville, Casey, & Kavanagh, 2010) or even face-to-face cognitive behavioural therapy (Salmoiraghi & Sambhi, 2010). As outlined in the introduction of this thesis, students belong to an age group, which is least likely to seek help from a mental health professional and most familiar with the use of the internet. In addition, students fear that seeking professional help could affect their career prospects (Chew-Graham et al., 2003).

6.9 Future directions

6.9.1 Optimisation of intervention content

The material used in the evaluated prevention trial was mainly text-based. Students commented that they found the modules wordy at times and suggested that they should contain more interactive elements. In fact, many internet-based mental health interventions are web-based versions of written self-help material and do not fully exploit the technical possibilities of the medium. Future research should address these limitations, which were a result of financial and time constraints. An internet-based intervention for students should include multi-media components such as audio or video clips. This could improve the appeal of the intervention to a wider audience, reduce dropout and make the content easier to comprehend. In addition, the length of the modules was a factor that may have reduced uptake of the intervention, suggesting that future research should seek to optimize content and length of the modules.

Many students responded in the feedback on the intervention that they would have liked a tailored aspect of the intervention. In the present randomised controlled trial, this would not have been feasible, as it would have impacted on evaluating the efficacy. However, with the techniques for detecting students at high risk and feedback mechanisms developed in this thesis, it would be relatively easy for future research studies to provide students with specific recommendations on what materials they should prioritise. This would also create a stronger link between the assessments students have to complete and the content offered on the website, making the intervention more rounded and appealing. To incorporate the finding from the web-survey and the focus groups, it should be considered whether they could be included within the trait-focused intervention to create an intervention that addresses both: vulnerability factors and stressors. In addition, the feedback from students on the content and usability of the project website should be incorporated into the intervention.

6.9.2 Expansion of study sample

All studies from this thesis were conducted with samples from large London universities and it is possible that the results cannot be generalised to students from other

universities and areas. Some of the issues raised and experienced by students may be artifacts of living in London or of studying at a particular university. Future research should investigate whether the link between personality risk factors and mental health in students is similar in other populations and whether the programme achieves different results. Particularly mature students and part-time students were underrepresented in the presented studies and future studies could investigate whether these groups are affected by different issues or respond differently to the intervention. In addition, it should be investigated whether male and female students benefit equally from the intervention or how the recruitment or the intervention content could be modified to reach more male students.

Future implementations of the intervention should aim for longer implementation periods preferably over a number of university terms. This would allow assessing whether there are times of increased need for students and whether the intervention is suitable for students at different stages of their studies and at different times during each term. In addition, longer follow-up periods should be included to investigate long-term outcomes of the intervention. Ultimately, this intervention was designed to prevent common mental disorders in students and future studies should set their focus beyond symptomatology and investigate whether the onset of such disorders can be prevented or delayed.

6.10 Overall conclusions

This thesis aimed to develop an internet-based trait-focused intervention to prevent common mental disorders in students. In several stages, the evidence base for student mental health and personality risk factors was examined, and an intervention was developed and tested in cooperation with experts and students. A method for detecting students at risk for developing common mental disorders was developed and validated and the intervention successfully reduced some symptoms of common mental disorders, such as anxiety and depression, in those students considered to be at high risk. Overall, the results were promising and suggest that targeting personality traits to prevent mental disorders in university students is a feasible and effective approach.

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Appendices

Appendix A - Ethical approval

A.1. Approval letter for study outlined in Chapter 2

Research Ethics Office

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KING'S College LONDON

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02 September 2009

Dear Peter Musiat

PNM/08/09-142 PLUS - Personality and living of University Students

Thank you for sending in the amendments requested to the above project. I am pleased to inform you that these meet the requirements of the PNM and therefore that full approval is now granted.

Please ensure that you follow all relevant guidance as laid out in the King's College London Guidelines on Good Practice in Academic Research (http://www.kcl.ac.uk/college/policyzone/attachments/good_practice_May_08_FINAL.pdf).

For your information ethical approval is granted until 02/09/2010. If you need approval beyond this point you will need to apply for an extension to approval at least two weeks prior to this explaining why the extension is needed, (please note however that a full re-application will not be necessary unless the protocol has changed). You should also note that if your approval is for one year, you will not be sent a reminder when it is due to lapse.

If you do not start the project within three months of this letter please contact the Research Ethics Office. Should you need to modify the project or request an extension to approval you will need approval for this and should follow the guidance relating to modifying approved applications: http://www.kcl.ac.uk/research/ethics/applicants/modifications.html

Any unforeseen ethical problems arising during the course of the project should be reported to the approving committee/panel. In the event of an untoward event or an adverse reaction a full report must be made to the Chairman of the approving committee/review panel within one week of the incident.

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.

If you have any query about any aspect of this ethical approval, please contact your panel/committee administrator in the first instance (http://www.kcl.ac.uk/research/ethics/contacts.html). We wish you every success with this work.

With best wishes

Yours sincerely

Helen English
Senior Research Ethics Officer

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A.2. Approval letter for study outlined in Chapter 3

Research Ethics Office

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Peter Musiat
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06 May 2010

Dear Peter

PNM/09/10-80 Students' psychological well-being at university

Thank you for sending in the amendments requested to the above project. I am pleased to inform you that these meet the requirements of the PNM RESC and therefore that full approval is now granted.

Please ensure that you follow all relevant guidance as laid out in the King's College London Guidelines on Good Practice in Academic Research (http://www.kcl.ac.uk/college/policyzone/attachments/good_practice_May_08_FINAL.pdf).

For your information ethical approval is granted until **06 May 2011**. If you need approval beyond this point you will need to apply for an extension to approval at least two weeks prior to this explaining why the extension is needed, (please note however that a full re-application will not be necessary unless the protocol has changed). You should also note that if your approval is for one year, you will not be sent a reminder when it is due to lapse.

If you do not start the project within three months of this letter please contact the Research Ethics Office. Should you need to modify the project or request an extension to approval you will need approval for this and should follow the guidance relating to modifying approved applications: http://www.kcl.ac.uk/research/ethics/applicants/modifications.html

Any unforeseen ethical problems arising during the course of the project should be reported to the approving committee/panel. In the event of an untoward event or an adverse reaction a full report must be made to the Chairman of the approving committee/review panel within one week of the incident.

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.

If you have any query about any aspect of this ethical approval, please contact your panel/committee administrator in the first instance (http://www.kcl.ac.uk/research/ethics/contacts.html). We wish you every success with this work.

With best wishes

Yours sincerely

Jim Summers
Senior Research Ethics Officer

c.c.
Professor Ulrike Schmidt

www.kcl.ac.uk

A.3. Approval letter for study outlined in Chapter 5

Research Ethics Office

5.11 Franklin-Wilkins Building
(Waterloo Bridge Wing)
Stamford Street
London SE1 9NH
Tel 020 7848 4077/4070/4020
Email rec@kcl.ac.uk
www.kcl.ac.uk/research/ethics

KING'S College LONDON

Peter Musiat
Section of Eating Disorders
PO Box 059
Institute of Psychiatry
De Crespigny Park
London
SE5 8AF

16 May 2011

Dear Peter

PNM/10/11-101 Trait focussed internet-based prevention of common mental health problems in university students.

Thank you for sending in the amendments requested to the above project. I am pleased to inform you that these meet the requirements of the PNM RESC and therefore that full approval is now granted with the following proviso:

1. We note that once obtained, you will submit written evidence of permissions from gatekeeper organisations to the Research Ethics Office, for record.

Please ensure that you follow all relevant guidance as laid out in the King's College London Guidelines on Good Practice in Academic Research (http://www.kcl.ac.uk/college/policyzone/index.php?id=247).

For your information ethical approval is granted until **16 May 2012**. If you need approval beyond this point you will need to apply for an extension to approval at least two weeks prior to this explaining why the extension is needed, (please note however that a full re-application will not be necessary unless the protocol has changed). You should also note that if your approval is for one year, you will not be sent a reminder when it is due to lapse.

If you do not start the project within three months of this letter please contact the Research Ethics Office. Should you need to modify the project or request an extension to approval you will need approval for this and should follow the guidance relating to modifying approved applications:
http://www.kcl.ac.uk/research/ethics/applicants/modifications.html

Any unforeseen ethical problems arising during the course of the project should be reported to the approving committee/panel. In the event of an untoward event or an adverse reaction a full report must be made to the Chairman of the approving committee/review panel within one week of the incident.

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.

If you have any query about any aspect of this ethical approval, please contact your panel/committee administrator in the first instance (http://www.kcl.ac.uk/research/ethics/contacts.html). We wish you every success with this work.

With best wishes

Yours sincerely

Jim Summers
Research Ethics Team Leader

www.kcl.ac.uk

Appendix B - Recruitment emails

B.1. Recruitment email for study outlined in Chapter 2

Dear KCL-Student,

Circular email for use for recruitment of volunteers for study ref:PNM/08/09-142, approved by the Psychiatry, Nursing & Midwifery ResearchEthics Committee. This project contributes to the College's role inconducting research, and teaching research methods. You are under noobligation to reply to this email, however if you choose to, participationin this research is voluntary and you may withdraw at anytime.

We would like to invite you to take part in a study about personality,mental health and lifestyle. The study investigates the relationship betweenpersonality factors and psychological and physical well-being and to whatextent these factors change during the first two years at university. We arelooking into factors that can contribute to the development of mental healthproblems or can prevent them.

For the study we are looking for students who are in the first two years oftheir studies. All you have to do is to go to our websitewww.personalityandliving.org.uk, create a profile and answer somequestionnaires. The questionnaires cover topics such as personality, eatingand drinking habits, mental health or the way you deal with tasks. The totalassessment will take about 1 hour, but you do not have to do it in one go.

Participation is anonymous; you don't have to provide any personal data.However, we would like you to provide an email address for us to contact youafter 6 months. You will be also randomly assigned to one of two groups andeither receive feedback on all questionnaires or only get feedback onpsychological and behavioural measures. After 6 months, we will ask you tocomplete the questionnaires again.

To thank you for your time we will raffle 20 gift vouchers with value of upto £20 for students who participate in the study.

If you have any questions about the project please contact Peter Musiat on0207 848 0184 or email Peter.Musiat@iop.kcl.ac.uk

This study is approved by the Psychiatry Nursing & Midwifery Research EthicsSub-Committee (PNM/08/09-142)

B.2. Recruitment email for study outlined in Chapter 3

Circular e-mail for use for the recruitment of volunteers for study PNM/09/10-80, approved by the Psychiatry, Nursing & Midwifery Ethics Committee. This project contributes to the College's role in conducting research, and teaching research methods. You are under no obligation to reply to this e-mail. However, if you choose to reply, participation in this research is voluntary and you may withdraw at any time.

Title: Students' psychological well-being at university

We would like to invite you to take part in the above-named research study. We are looking for male and female volunteers aged 18 years or older, who are currently studying at King's College London and within their first three years of studying. If more students wish to participate than there are places in our study, we will select participants according to their subject, as we would like to invite students from different courses.

The purpose of the study is to investigate students' views and needs when it comes to psychological well-being at university. In focus group interviews, we would like to find out more about the challenges of studying and how they affect students' well-being. Furthermore we want to find out, where students see opportunities to be supported regarding these challenges. The data are to contribute to the development of the internet-based prevention programme for common mental health problems in students (depression, drug or alcohol misuse, eating disorders, anxiety). The study is a student project being undertaken as part of a PhD.

Taking part involves a single group meeting of about one and a half hours, with two researchers and five other students, at the Institute of Psychiatry, De Crespigny Park, London SE5 8AF. If you decide to take part, you will be asked to discuss a number of topics together with the researchers and the other students in the group. The topics cover questions about the challenges of studying now and when you started, your and other peoples' strategies for dealing with these challenges and how students could be supported with these challenges. Before the group discussion, we would like you to fill

out a brief questionnaire that covers demographic variables as well as your current psychological health.

The group discussion will be recorded onto audio-tape so that it can be transcribed into writing. In the transcripts, data will be anonymised. After transcription, the recordings will be destroyed. All information collected about you during the course of the research will be kept strictly confidential, and you will not be identifiable in any publications derived from the study.

If you are interested in participating, or would like further information, please contact Peter Musiat at peter.musiat@kcl.ac.uk or call 0207 848 0183.

B.3. Recruitment email for study outlined in Chapter 5

Circular email for use for recruitment of volunteers for study ref:PNM/10/11-101 approved by the Psychiatry, Nursing & Midwifery ResearchEthics Committee. This project contributes to the College's role inconducting research, and teaching research methods. You are under noobligation to reply to this email, however if you choose to, participationin this research is voluntary and you may withdraw at anytime.

Dear Student,

We would like to invite you to take part in a study on internet-basedprevention of common mental health problems (such as depression, eatingdisorders, alcohol and substance misuse, anxiety) in university students.The study investigates whether a website with helpful information on studentliving and the challenges and problems of studying can improve yourwell-being and reduce stress or anxiety.

For the study we are looking for undergraduate or postgraduate studentsstudying at a university in the UK. All you have to do is to go to ourwebsite: www.plusonline.org.uk, create a profile and answer somequestionnaires. The questionnaires cover topics such as personality, eatingand drinking habits, mental health or the way you deal with tasks. The totalassessment will take about 20-40 minutes, but you do not have to do it inone go. You will receive feedback on your questionnaire results online andget access to a website with lots of useful information designed to help youwith your studies and your life as a student in London. After 6 weeks and 12weeks, we would like to ask you to fill out some of the questionnairesagain, for us to see whether things have changed. These follow-upassessments will only take 10-25 minutes. Further information on a separatesheet is available on the website or can be requested by responding to thisemail.

To thank you for your time, you will receive a £15 Amazon voucher aftercompleting all three assessments.

Participation is anonymous; you don't have to provide any personal data.However, we would like you to provide an email address for us to contact youafter 6 weeks and 12

weeks and to send you the gift voucher. If you have any questions about the project please contact Peter Musiat on0207 848 0183 or email Peter.Musiat@kcl.ac.uk

This study is approved by the King's College London Psychiatry Nursing &Midwifery Research Ethics Sub-Committee (PNM/10/11-101)

Appendix C - Questionnaires

C.1. NEO-FFI

NEO-FFI
Please read each of the statements carefully. Circle the response that best represents your opinion.
Please fill in only one response for each statement and respond to all statements.

	0	1	2	3	4
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I am not a worrier.					
2. I like to have a lot of people around me.					
3. I don't like to waste my time daydreaming.					
4. I try to be courteous to everyone I meet.					
5. I keep my belongings clean and neat.					
6. I often feel inferior to others.					
7. I laugh easily.					
8. Once I find the right way to do something, I stick to it.					
9. I often get into arguments with my family and co-workers.					
10. I'm pretty good about pacing myself so as to get things done on time.					
11. When I am under a great deal of stress, sometimes I feel like I am going to pieces.					
12. I don't consider myself especially light-hearted.					
13. I am intriguing by the patterns I find in art and nature.					
14. Some people think I'm selfish and egoistical.					
15. I am not a very methodological person.					
16. I rarely feel lonely or blue.					
17. I really enjoy talking to people.					
18. I believe letting students hear controversial speakers can only confuse and mislead them.					
19. I would rather cooperate with others than compete with them.					
20. I try to perform all tasks assigned to me conscientiously.					
21. I often feel tense and jittery.					
22. I like to where the action is.					
23. Poetry has little or no effect on me.					
24. I tend to be cynical and skeptical of others intentions.					
25. I have a clear set of goals and work toward them in an orderly fashion.					
26. Sometimes I feel completely worthless.					
27. I usually prefer to do things alone.					
28. I often try new and foreign foods.					
29. I believe that most people will take advantage of you if you let them.					
30. I waste a lot of time before settling down to work.					
31. I rarely feel fearful or anxious.					
32. I often feel as if I'm bursting with energy.					
33. I seldom notice the moods or feelings that different environments produce.					
34. Most people I know like me.					
35. I work hard to accomplish my goals.					
36. I often get angry at the way people treat me.					
37. I am cheerful, high-spirited person.					
38. I believe we should look to our religious authorities for decisions on moral issues.					
39. Some people think of me as cold and calculating.					
40. When I make a commitment, I can always b counted on to follow through.					
41. Too often, when things go wrong I feel discouraged and feel like giving up.					
42. I am not a cheerful optimist.					
43. Sometimes when I am reading poetry or looking at a work of art, I feel a chill or wave of excitement.					
44. I'm hard-headed and tough-minded in my attitudes.					
45. Sometimes I'm not as dependable or reliable as I should be.					
46. I am seldom sad or depressed.					
47. My life is fast-paced.					
48. I have little interest in speculating on the nature of the universe or the human condition.					
49. I generally try to be thoughtful and considerate.					
50. I am a productive person who always gets the job done.					
51. I often feel helpless and want someone else to solve my problems.					
52. I am a very active person.					
53. I have a lot of intellectual curiosity.					
54. If I don't like people, I let them know it.					
55. I never seem to be able to get organized.					
56. At times I have been so ashamed I just wanted to hide.					
57. I would rather go on my own way than be a leader of others.					
58. I often enjoy playing with theories and ideas.					
59. If necessary, I am willing to manipulate people to get what I want.					
60. I strive for excellence in everything I do.					

C.2. Frost Multidimensional Perfectionism Scale (FMPS)

!!!!!!! ONLY *CM*, *PS* AND *D* WILL BE USED IN THE STUDY !!!!!!!!!

			Strongly disagree	Disagree.	Neither agree nor	Agree.	Strongly agree
1	PE	My parents set very high standards for me.	-2	-1	0	1	2
2	O	Organization is very important to me.	-2	-1	0	1	2
3	PC	As a child I was punished for doing things less than perfect.	-2	-1	0	1	2
4	PS	If I do not set the highest standards for myself, I am likely to end up second-rate person.	-2	-1	0	1	2
5	PC	My parents never tried to understand my mistakes.	-2	-1	0	1	2
6	PS	It is important to me that I am thoroughly competent in everything I do.	-2	-1	0	1	2
7	O	I am a neat person.	-2	-1	0	1	2
8	O	I try to be an organized person.	-2	-1	0	1	2
9	CM	If I fail at work / school, I am a failure as a person.	-2	-1	0	1	2
10	CM	I should be upset if I make a mistake.	-2	-1	0	1	2
11	PE	My parents wanted me to be the best at everything.	-2	-1	0	1	2
12	PS	I set higher goals than most people.	-2	-1	0	1	2
13	CM	If someone does a task at work / school better than I, then I feel like I failed the whole task.	-2	-1	0	1	2
14	CM	If I fail partly, it is as bad as being a complete failure.	-2	-1	0	1	2
15	PE	Only outstanding performance is good enough in my family.	-2	-1	0	1	2
16	PS	I am very good at focussing my efforts at attaining a goal.	-2	-1	0	1	2
17	D	Even when I do something very carefully, I often feel that it is not quite right.	-2	-1	0	1	2
18	CM	I hate being less than the best at things.	-2	-1	0	1	2
19	PS	I have extremely high goals.	-2	-1	0	1	2
20	PE	My parents have expected excellence from me.	-2	-1	0	1	2
21	CM	People will probably think less of me if I make a mistake.	-2	-1	0	1	2
22	PC	I never felt like I could meet my parents' expectations.	-2	-1	0	1	2
23	CM	If I do not do as well as people, it means I am an inferior human being.	-2	-1	0	1	2
24	PS	Other people seem to accept lower standards from themselves that I do.	-2	-1	0	1	2
25	CM	If I do not do well all the time, people will not respect me.	-2	-1	0	1	2
26	PE	My parents have always had higher expectations for my future than I have.	-2	-1	0	1	2
27	O	I try to be a neat person.	-2	-1	0	1	2
28	D	I usually have doubts about the simple everyday things I do.	-2	-1	0	1	2
29	O	Neatness is very important to me.	-2	-1	0	1	2
30	PS	I expect higher performance in my daily tasks than most people.	-2	-1	0	1	2
31	O	I am an organized person.	-2	-1	0	1	2
32	D	I tend to get behind my work because I repeat things over and over.	-2	-1	0	1	2
33	D	It takes me a long time to do something "right".	-2	-1	0	1	2
34	CM	The fewer mistakes I make, the more people will like me.	-2	-1	0	1	2
35	PC	I never felt like I could meet my parents' standards.	-2	-1	0	1	2

C.3. Substance Use Risk Profile (SURPS)

SURPS

		Strongly disagree			Strongly agree
01	I am content	1	2	3	4
02	I often do not think things through before I speak	1	2	3	4
03	I would like to skydive	1	2	3	4
04	I am happy	1	2	3	4
05	I often involve myself in situations that I later regret being involved in	1	2	3	4
06	I enjoy new and exciting experiences even if they are unconventional	1	2	3	4
07	I have faith that my future holds great promise	1	2	3	4
08	It is frightening to feel dizzy or faint	1	2	3	4
09	I like doing things that frighten me a little	1	2	3	4
10	It frightens me when I feel my heart beat change	1	2	3	4
11	I usually act without stopping to think	1	2	3	4
12	I would like to learn how to drive a motorcycle	1	2	3	4
13	I feel proud of my accomplishments	1	2	3	4
14	I get scared when I am too nervous	1	2	3	4
15	Generally, I am an impulsive person	1	2	3	4
16	I am interested in experience for its own sake even if it is illegal	1	2	3	4
17	I feel that I am a failure	1	2	3	4
18	I get scared when I experience unusual body sensations	1	2	3	4
19	I would enjoy hiking long distances in wild and uninhabited territory	1	2	3	4
20	I feel pleasant	1	2	3	4
21	It scares me when I am unable to focus on a task	1	2	3	4
22	I feel I have to be manipulative to get what I want	1	2	3	4
23	I am very enthusiastic about my future	1	2	3	4

C.4. Ruttger Alcohol Problem Index (RAPI)

R. A. P. I

Different things happen to people while they are drinking ALCOHOL or as a result of their ALCOHOL use. Some of these things are listed below. Please indicate how many times each has happened to you during the last three years while you were drinking alcohol or as the result of your alcohol use. When marking your answers, use the following code:

0 = never
1 = 1-2 times
2 = 3-5 times
3 = 6-10 times
4 = more than 10 times

How many times did the following things happen to you while you were drinking alcohol or because of your alcohol use during the last 3 years?

0 1 2 3 4 Not able to do your homework or study for a test
0 1 2 3 4 Got into fights, acted bad, or did mean things
0 1 2 3 4 Missed out on other things because you spent too much money on alcohol

0 1 2 3 4 Went to work or school high or drunk
0 1 2 3 4 Caused shame or embarrassment to someone
0 1 2 3 4 Neglected your responsibilities

0 1 2 3 4 Relatives avoided you
0 1 2 3 4 Felt that you needed more alcohol than you used to use in order to get the same effect
0 1 2 3 4 Tried to control your drinking by trying to drink only at certain times of the day or certain places

0 1 2 3 4 Had withdrawal symptoms, that is, felt sick because you stopped or cut down on drinking
0 1 2 3 4 Noticed a change in your personality
0 1 2 3 4 Felt that you had a problem with alcohol

0 1 2 3 4 Missed a day (or part of a day) of school or work
0 1 2 3 4 Tried to cut down or quit drinking
0 1 2 3 4 Suddenly found yourself in a place that you could not remember getting to

0 1 2 3 4 Passed out or fainted suddenly
0 1 2 3 4 Had a fight, argument or bad feelings with a friend
0 1 2 3 4 Had a fight, argument or bad feelings with a family member

0 1 2 3 4 Kept drinking when you promised yourself not to
0 1 2 3 4 Felt you were going crazy
0 1 2 3 4 Had a bad time

0 1 2 3 4 Felt physically or psychologically dependent on alcohol
0 1 2 3 4 Was told by a friend or neighbor to stop or cut down drinking

C.5. Drinking Motives Questionnaire – Revised (DMQ-R)

DMQ-R

INSTRUCTIONS: Listed below are 20 reasons people might be inclined to drink alcoholic beverages. Using the five-point scale below, decide how frequently your own drinking is motivated by each of the reasons listed.

	YOU DRINK…	Almost Never/Never	Some of the time	Half of the time	Most of the time	Almost Always/Always
1.	To forget your worries.	1	2	3	4	5
2.	Because your friends pressure you to drink.	1	2	3	4	5
3.	Because it helps you enjoy a party.	1	2	3	4	5
4.	Because it helps you when you feel depressed or nervous.	1	2	3	4	5
5.	To be sociable.	1	2	3	4	5
6.	To cheer up when you are in a bad mood.	1	2	3	4	5
7.	Because you like the feeling.	1	2	3	4	5
8.	So that others won't kid you about *not* drinking	1	2	3	4	5
9.	Because it's exciting.	1	2	3	4	5
10.	To get high.	1	2	3	4	5
11.	Because it makes social gatherings more fun.	1	2	3	4	5
12.	To fit in with a group you like.	1	2	3	4	5
13.	Because it gives you a pleasant feeling.	1	2	3	4	5
14.	Because it improves parties and celebrations.	1	2	3	4	5
15.	Because you feel more self-confident and sure of yourself.	1	2	3	4	5
16.	To celebrate a special occasion with friends.	1	2	3	4	5
17.	To forget about your problems.	1	2	3	4	5
18.	Because it's fun.	1	2	3	4	5
19.	To be liked.	1	2	3	4	5
20.	So you won't feel left out.	1	2	3	4	5

C.6. Eating Motives Questionnaire (EMQ)

EMQ

INSTRUCTIONS: Everyone needs to eat food for nourishment. In addition to satisfying survival needs, there are other motivations to consume food. Listed below are 15 reasons people might be inclined to eat food. Using the four-point scale on the right, **decide how frequently your own eating is motivated by each of the reasons listed.** Then, darken the circle on your computer answer sheet that corresponds to your choice for each item.

	I EAT…	Never/Almost Never	Sometimes	Often	Almost always/Always
1.	As a way to celebrate.	1	2	3	4
2.	To relax.	1	2	3	4
3.	Because I like the feeling.	1	2	3	4
4.	Because it is what most of my friends do when we get together.	1	2	3	4
5.	To forget my worries.	1	2	3	4
6.	Because it's exciting.	1	2	3	4
7.	To be sociable.	1	2	3	4
8.	To feel more self-confident or sure of myself.	1	2	3	4
9.	To get high.	1	2	3	4
10.	Because it is customary on special occasions.	1	2	3	4
11.	Because it helps when I feel depressed or nervous.	1	2	3	4
12.	Because it's fun.	1	2	3	4
13.	Because it makes a social gathering more enjoyable.	1	2	3	4
14.	To cheer up when I am in a bad mood.	1	2	3	4
15.	Because it makes me feel good.	1	2	3	4

C.7. Three Factor Eating Questionnaire R18 (TFE)

TFE-R18

Cognitive Restraint
1. I deliberately take small helpings as a means of controlling my weight.
definitely true - mostly true - mostly false - definitely false

2. I consciously hold back at meals in order not to gain weight.
definitely true - mostly true - mostly false - definitely false

3. I do not eat some foods because they make me fat.
definitely true - mostly true - mostly false - definitely false

4. How frequently do you avoid `stocking up' on tempting foods?
almost never – seldom – usually - almost always

5. How likely are you to consciously eat less than you want?
Unlikely - slightly likely - moderately likely – very likely

6. On a scale of 1 to 8, where 1 means no restraint in eating (eating whatever you want, whenever you want it) and 8 means total restraint (constantly limiting food intake and never `giving in'), what number would you give yourself?
1 2 3 4 5 6 7 8

Uncontrolled eating
1. When I smell a sizzling steak or a juicy piece of meat, I find it very difficult to keep from eating, even if I have just finished a meal.
definitely true - mostly true - mostly false - definitely false

2. Sometimes when I start eating, I just can't seem to stop.
definitely true - mostly true - mostly false - definitely false

3. Being with someone who is eating often makes me hungry enough to eat also.
definitely true - mostly true - mostly false - definitely false

4. When I see a real delicacy, I often get so hungry that I have to eat right away.
definitely true - mostly true - mostly false – definitely false

5. I get so hungry that my stomach often seems like a bottomless pit.
definitely true - mostly true - mostly false – definitely false

6. I am always hungry so it is hard for me to stop eating before I finish the food on my plate.
definitely true - mostly true - mostly false - definitely false

7. I am always hungry enough to eat at any time.
definitely true - mostly true - mostly false - definitely false

8. How often do you feel hungry?
only at mealtimes - sometimes between meals – often between meals - almost always

9. Do you go on eating binges though you are not hungry?
never - rarely - sometimes - at least once a week

Emotional eating
1. When I feel anxious, I find myself eating.
definitely true - mostly true - mostly false – definitely false

2. When I feel blue, I often overeat.
definitely true - mostly true - mostly false – definitely false

3. When I feel lonely, I console myself by eating.
definitely true - mostly true - mostly false – definitely false

C.8. Rosenberg Self-Esteem Scale (RSES)

Rosenberg Self-Esteem Scale (Rosenberg, 1965)

The scale is a ten item Likert scale with items answered on a four point scale - from strongly agree to strongly disagree. The original sample for which the scale was developed consisted of 5,024 High School Juniors and Seniors from 10 randomly selected schools in New York State.

Instructions: Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle **SA**. If you agree with the statement, circle **A**. If you disagree, circle **D**. If you strongly disagree, circle **SD**.

1.	On the whole, I am satisfied with myself.	SA	A	D	SD
2.*	At times, I think I am no good at all.	SA	A	D	SD
3.	I feel that I have a number of good qualities.	SA	A	D	SD
4.	I am able to do things as well as most other people.	SA	A	D	SD
5.*	I feel I do not have much to be proud of.	SA	A	D	SD
6.*	I certainly feel useless at times.	SA	A	D	SD
7.	I feel that I'm a person of worth, at least on an equal plane with others.	SA	A	D	SD
8.*	I wish I could have more respect for myself.	SA	A	D	SD
9.*	All in all, I am inclined to feel that I am a failure.	SA	A	D	SD
10.	I take a positive attitude toward myself.	SA	A	D	SD

Scoring: SA=3, A=2, D=1, SD=0. Items with an asterisk are reverse scored, that is, SA=0, A=1, D=2, SD=3. Sum the scores for the 10 items. The higher the score, the higher the self esteem.

The scale may be used without explicit permission. The author's family, however, would like to be kept informed of its use:

The Morris Rosenberg Foundation
c/o Department of Sociology
University of Maryland
2112 Art/Soc Building
College Park, MD 20742-1315

References

References with further characteristics of the scale:

Crandal, R. (1973). The measurement of self-esteem and related constructs, Pp. 80-82 in J.P. Robinson & P.R. Shaver (Eds), **Measures of social psychological attitudes. Revised edition**. Ann Arbor: ISR.

C.9. World Health Organization Quality Of Life Questionnaire (WHOQOL-BREF)

Whoqol Bref

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5

19.	How satisfied are you with yourself?	1	2	3	4	5
20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	5	4	3	2	1

C.10. Alcohol Use Disorders Identification Test (AUDIT)

Box 10

The Alcohol Use Disorders Identification Test: Self-Report Version

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest.
Place an X in one box that best describes your answer to each question.

Questions	0	1	2	3	4	
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more	
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
					Total	

C.11. Drug Use Disorders Identification Test (DUDIT)

Id. nr. ☐☐☐☐☐☐

DUDIT Drug Use Disorders Identification Test

Here are a few questions about drugs. Please answer as correctly and honestly as possible by indicating which answer is right for you.

☐ **Man** ☐ **Woman** **Age** ☐☐

1. How often do you use drugs other than alcohol? (See list of drugs on back side.)	Never ☐	Once a month or less often ☐	2-4 times a month ☐	2-3 times a week ☐	4 times a week or more often ☐
2. Do you use more than one type of drug on the same occasion?	Never ☐	Once a month or less often ☐	2-4 times a month ☐	2-3 times a week ☐	4 times a week or more often ☐
3. How many times do you take drugs on a typical day when you use drugs?	0 ☐	1-2 ☐	3-4 ☐	5-6 ☐	7 or more ☐
4. How often are you influenced heavily by drugs?	Never ☐	Less often than once a month ☐	Every month ☐	Every week ☐	Daily or almost every day ☐
5. Over the past year, have you felt that your longing for drugs was so strong that you could not resist it?	Never ☐	Less often than once a month ☐	Every month ☐	Every week ☐	Daily or almost every day ☐
6. Has it happened, over the past year, that you have not been able to stop taking drugs once you started?	Never ☐	Less often than once a month ☐	Every month ☐	Every week ☐	Daily or almost every day ☐
7. How often over the past year have you taken drugs and then neglected to do something you should have done?	Never ☐	Less often than once a month ☐	Every month ☐	Every week ☐	Daily or almost every day ☐
8. How often over the past year have you needed to take a drug the morning after heavy drug use the day before?	Never ☐	Less often than once a month ☐	Every month ☐	Every week ☐	Daily or almost every day ☐
9. How often over the past year have you had guilt feelings or a bad conscience because you used drugs?	Never ☐	Less often than once a month ☐	Every month ☐	Every week ☐	Daily or almost every day ☐
10. Have you or anyone else been hurt (mentally or physically) because you used drugs?		No ☐	Yes, but not over the past year ☐		Yes, over the past year ☐
11. Has a relative or a friend, a doctor or a nurse, or anyone else, been worried about your drug use or said to you that you should stop using drugs?		No ☐	Yes, but not over the past year ☐		Yes, over the past year ☐

Turn the page to see the list of drugs

LIST OF DRUGS

(Note! Not alcohol!)

Cannabis	Amphetamines	Cocaine	Opiates	Hallucinogens	Solvents/inhalants	GHB and others
Marijuana Hash Hash oil	Methamphetamine Phenmetraline Khat Betel nut Ritaline (Methylphenidate)	Crack Freebase Coca leaves	Smoked heroin Heroin Opium	Ecstasy LSD (Lisergic acid) Mescaline Peyote PCP, angel dust (Phencyclidine) Psilocybin DMT (Dimethyltryptamine)	Thinner Trichlorethylene Gasoline/petrol Gas Solution Glue	GHB Anabolic steroids Laughing gas (Halothane) Amyl nitrate (Poppers) Anticholinergic compounds

PILLS – MEDICINES

Pills count as drugs when you take

- more of them or take them more often than the doctor has prescribed for you
- pills because you want to have fun, feel good, get ”high”, or wonder what sort of effect they have on you
- pills that you have received from a relative or a friend
- pills that you have bought on the ”black market” or stolen

SLEEPING PILLS/SEDATIVES

Alprazolam	Glutethimide	Rohypnol
Amobarbital	Halcion	Secobarbital
Apodorm	Heminevrin	Sobril
Apozepam	Iktorivil	Sonata
Aprobarbital	Imovane	Stesolid
Butabarbital	Mephobarbital	Stilnoct
Butalbital	Meprobamate	Talbutal
Chloral hydrate	Methaqualone	Temesta
Diazepam	Methohexital	Thiamyal
Dormicum	Mogadon	Thiopental
Ethcholorvynol	Nitrazepam	Triazolam
Fenemal	Oxascand	Xanor
Flunitrazepam	Pentobarbital	Zopiklon
Fluscand	Phenobarbital	

PAINKILLERS

Actiq	Durogesic	OxyNorm
Coccilana-Etyfin	Fentanyl	Panocod
Citodon	Ketodur	Panocod forte
Citodon forte	Ketogan	Paraflex comp
Dexodon	Kodein	Somadril
Depolan	Maxidon	Spasmofen
Dexofen	Metadon	Subutex
Dilaudid	Morfin	Temgesic
Distalgesic	Nobligan	Tiparol
Dolcontin	Norflex	Tradolan
Doleron	Norgesic	Tramadul
Dolotard	Opidol	Treo comp
Doloxene	OxyContin	

Pills do NOT count as drugs if they have been prescribed by a doctor and you take them in the prescribed dosage.

C.12. Patient Health Questionnaire (PHQ)

PHQ- 9

	Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1	Little interest or pleasure in doing things	0	1	2	3
2	Feeling down, depressed, or hopeless	0	1	2	3
3	Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4	Feeling tired or having little energy	0	1	2	3
5	Poor appetite or overeating	0	1	2	3
6	Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7	Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8	Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9	Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

A11 – PHQ9 total score ☐

C.13. Generalised Anxiety Disorder Scale (GAD)

GAD-7

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1 Feeling nervous, anxious or on edge	0	1	2	3
2 Not being able to stop or control worrying	0	1	2	3
3 Worrying too much about different things	0	1	2	3
4 Trouble relaxing	0	1	2	3
5 Being so restless that it is hard to sit still	0	1	2	3
6 Becoming easily annoyed or irritable	0	1	2	3
7 Feeling afraid as if something awful might happen	0	1	2	3
	A12 – GAD7 total score			

C.14. IAPT Phobia Scales

IAPT Phobia Scales

Choose a number from the scale below to show how much you would avoid each of the situations or objects listed below. Then write the number in the box opposite the situation.

0	1	2	3	4	5	6	7	8
Would not avoid it		Slightly avoid it		Definitely avoid it		Markedly avoid it		Always avoid it

A17	Social situations due to a fear of being embarrassed or making a fool of myself	
A18	Certain situations because of a fear of having a panic attack or other distressing symptoms (such as loss of bladder control, vomiting or dizziness)	
A19	Certain situations because of a fear of particular objects or activities (such as animals, heights, seeing blood, being in confined spaces, driving or flying).	

C.15. Eating Disorders Diagnostics Scale

Appendix B

Eating Screen

Please carefully complete all questions.

Over the past 3 months . . .	Not at all		Slightly		Moderately		Extremely
1. Have you felt fat?	0	1	2	3	4	5	6
2. Have you had a definite fear that you might gain weight or become fat?	0	1	2	3	4	5	6
3. Has your weight influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6
4. Has your shape influenced how you think about (judge) yourself as a person?	0	1	2	3	4	5	6

5. During the past 6 months have there been times when you felt you have eaten what other people would regard as an unusually large amount of food (e.g., a quart of ice cream) given the circumstances? YES NO
6. During the times when you ate an unusually large amount of food, did you experience a loss of control (feel you couldn't stop eating or control what or how much you were eating)? YES NO
7. How many DAYS per week on average over the past 6 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7
8. How many TIMES per week on average over the past 3 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

During these episodes of overeating and loss of control did you . . .

9. Eat much more rapidly than normal? YES NO
10. Eat until you felt uncomfortably full? YES NO
11. Eat large amounts of food when you didn't feel physically hungry? YES NO
12. Eat alone because you were embarrassed by how much you were eating? YES NO
13. Feel disgusted with yourself, depressed, or very guilty after overeating? YES NO
14. Feel very upset about your uncontrollable overeating or resulting weight gain? YES NO

15. How many times per week on average over the past 3 months have you made yourself vomit to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
16. How many times per week on average over the past 3 months have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
17. How many times per week on average over the past 3 months have you fasted (skipped at least 2 meals in a row) to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
18. How many times per week on average over the past 3 months have you engaged in excessive exercise specifically to counteract the effects of overeating episodes? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

19. How much do you weigh? If uncertain, please give your best estimate. ____lb
20. How tall are you? __ft __in.
21. Over the past 3 months, how many menstrual periods have you missed? 1 2 3 4 *na*
22. Have you been taking birth control pills during the past 3 months? YES NO

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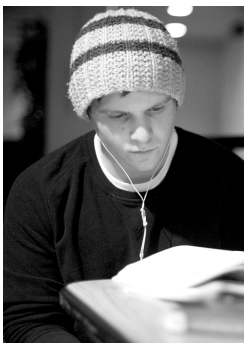
Appendix D - Focus group case scenarios

David, age 19



You've always known David as a party animal. On nights out, he would often experiment with different drugs. Recently, you've noticed that he seems increasingly dependent on taking drugs to be able to enjoy himself and his personality has changed. You sometimes notice that he's talking to himself. He seems paranoid and has told you that he thinks someone is following him.

Jenny, age 22

Your friend Jenny has become very thin since she started university. She has stopped joining you for lunch in the canteen or says she's not hungry if she does come. Although she tends to wear long sleeved clothing, you have noticed lots of small cuts on her arms. Jenny has stopped going out and seems uncomfortable in social situations.

Appendix E - Trait-focused intervention content

E.1. Introductory module

PLUS
Personality and Living of University Students

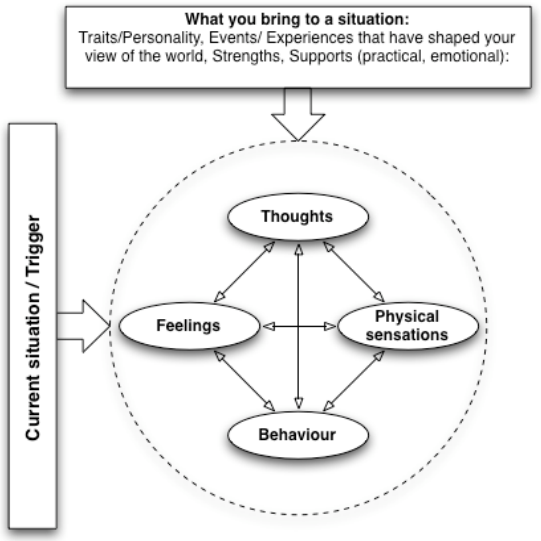
Introduction

Welcome to PLUS – Personality and Living of University Students. We have developed this page for you to learn more about your personality, your strengths and weaknesses; and to give you some tips on how to get the most out of student life and make it a bit easier and less stressful.

Student life can be a lot of fun, but has major challenges and can be stressful at times. This can take a toll on people's well-being and ability to function. In fact, research has shown that students have significantly higher rates of psychological distress and mental health problems than other young people of similar age.

Here we want you to think about how you deal with the academic, personal and practical challenges of student life. Some students are better than others at dealing with challenges than others. Some fairly common personal characteristics (or traits) people have may make it harder to settle into student life. These include for example, being anxious or somewhat sensitive to stress, being perfectionist or having low self-esteem. Stress arises when there is a mismatch between what a person brings to a situation in terms of personal characteristics and resources and the nature of the demand or challenge they face.

To start with we would like to give you a template for assessing what characteristics you bring to the challenges of student life and how that can affect the way in which you deal with these challenges, both to the positive and the negative. Have a look at the picture below.



This diagram shows the so-called five areas assessment model, developed by Professor Christopher Williams from the University of Glasgow. This model illustrates how in any given situation our thoughts, feelings, behaviour and body are related, and how they are affected by what we bring to the situation. The model also helps identify where things go in the wrong direction.

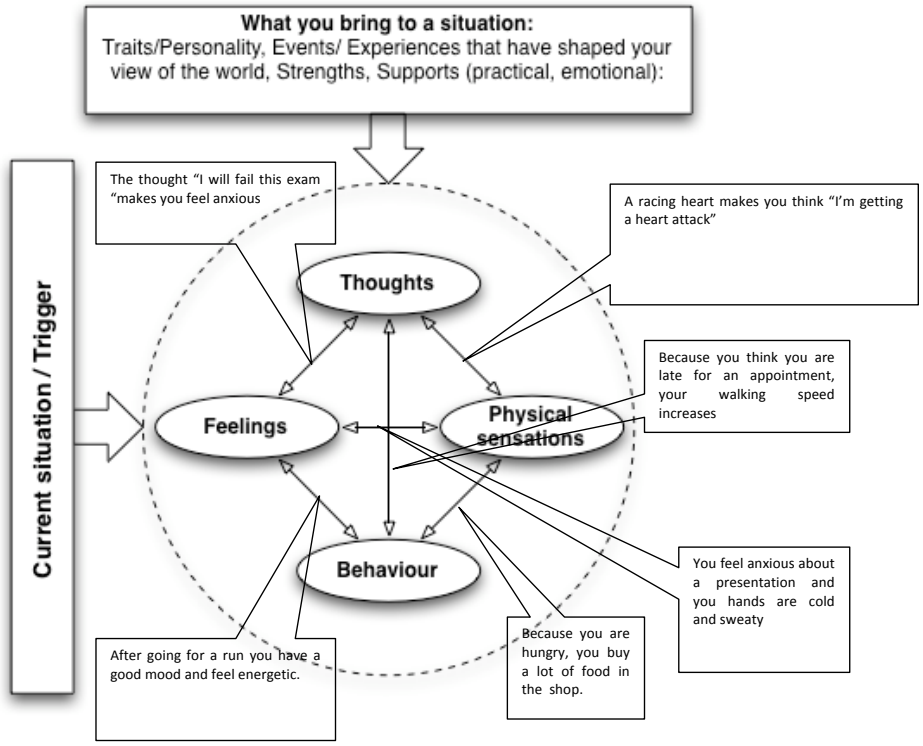
The box at the top represents what you bring to a situation: your traits or personality; any events or experiences that have shaped your view of the world; your personal strengths and your supports (practical, emotional). The arrow between the box and the circle indicates that these background factors can influence our thoughts, feelings and behaviour when in a given situation (here called a trigger or current challenge). You can have a look at some particular personality factors that influence our thoughts, feelings and behaviour later in this programme.

The circle and everything in it is your response to a particular situation or challenge: your thoughts, your feelings, your behaviour and your bodily reaction. The arrows between the four areas indicate that each area can influence any other area. Your behaviour can affect your feelings, your physical sensations can affect your thoughts and so on.

Let's have a look at an example:

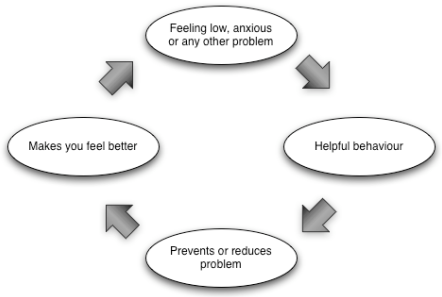
Imagine you have a bad cold. Your body may feel weak, your nose is blocked and your head hurts. How does that make you feel? Most likely you won't feel very cheerful. How would that affect your thoughts? You might think 'I want this to go away as soon as possible' or 'Why does this always happen to me…?". Finally, how would your behaviour be affected? You might take some medication, drink lots of tea and stay home and not work. Now if say in your background there has been lots of previous illness and you are also a rather anxious person your thoughts in response to your bad cold might be more catastrophic, e.g. 'perhaps I am developing pneumonia – this could be dangerous'.

The picture below shows a few more examples for these connections.



The five areas model allows us to understand why different people react differently to the same situation, challenge or trigger. Sometimes we tend to interpret situations in an extreme or negative way. That can make us feel anxious or depressed and also lead to extreme or unhelpful behaviour. You are going to learn more about unhelpful behaviours in the next sections.

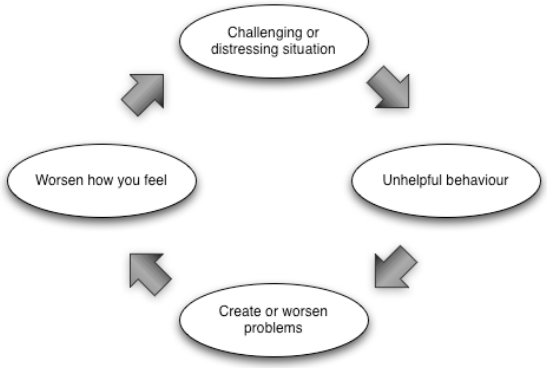
Before we look at *unhelpful* behaviours, let's have a look what characterises *helpful* behaviours. The image below shows a typical cycle of helpful behaviour.



Note how the helpful behaviour can be triggered by emotions and feelings or any other problem. The helpful behaviour prevents, reduces or solves the problem. However, the positive effects of the helpful behaviour might not be apparent immediately and take time to appear. This will be important when we look at cycles of unhelpful behaviours and why it is sometimes easy to get stuck in them. It can be quite difficult to determine whether a particular behaviour is helpful or not and often behaviour might appear helpful at first sight, but it actually is not. Below are some examples of helpful behaviours. Which ones do you do? What other helpful behaviours that you do can you think of?

- Stopping, thinking and reflecting on things when a new challenge arises, rather than jumping to conclusions – letting upsetting thoughts "be" rather than constantly mulling them over.
- Seeking support from others when you feel upset, unhappy, confused or lonely: Sharing concerns appropriately with trusted friends and family.
- Being good to myself: Eating regularly and healthily - taking time to enjoy the food.
- Getting enough sleep. This may sound daft, but burning the candle at both ends can make you stressed and miserable.
- Keeping physically active – e.g. doing exercise/going for walks/swimming/going to a gym.
- Doing things for fun/pleasure (e.g. friends, hobbies, listening to music).
- Socialising at a level you can cope with – whether that means by telephone, email, or going out (i.e. not constantly being on a hedonic treadmill or partying so hard you are completely washed out).
- Finding out more about anxiety/depression – such as by reading self-help materials.
- Putting what you are learning about stress, anxiety and depression into practice.

Now, let's have a look at the cycle of extreme or unhelpful behaviour. The image below shows a typical cycle of unhelpful behaviour.



The biggest difference between helpful and unhelpful behaviours is that the latter worsen the original problem and do not solve it. Unhelpful behaviours can make you worse physically, emotionally or can negatively affect your relationships with others. So why do we use unhelpful behaviours if they can be bad for us? Sometimes we are not aware of how extreme or unhelpful a particular behaviour is. This becomes even more difficult if the unhelpful behaviour seems to work quite well for us initially. However, at some point such behaviours backfire and the problem becomes worse.

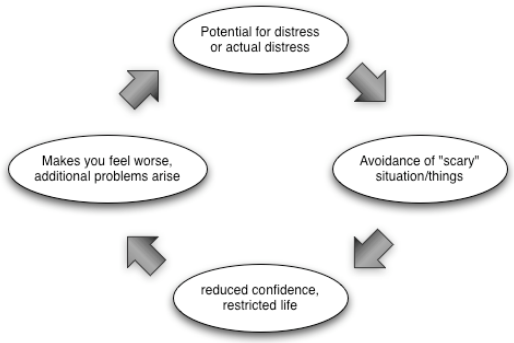
Note: Unhelpful behaviours can seem helpful in the short term, but have negative consequences in the long run!

A good example of such unhelpful behaviours is the use of drink or drugs. Many students enjoy a drink with friends. Some people drink or use drugs to cope with difficult emotions or to reduce social anxiety. In the short term it seems as if drink or drugs can help, as they make you feel more relaxed. However, neither drink nor drugs solve the original problems, which will come back again. On top of that they can cause physical problems (hangovers, being sick, withdrawal, liver problems etc), financial problems or problems with family and friends. Below are other examples of unhelpful behaviours. Which ones do you do? What other unhelpful behaviours that you might sometimes do can you think of?

- Misusing drink/illegal drugs or prescribed medication to block how you feel in general or improve how you sleep etc.
- Eating too much to block how you feel (“comfort eating”), or over-eating so much that this becomes a “binge” and you feel physically uncomfortable
- Trying to spend your way out of how you feel by going shopping (“retail therapy”)
- Avoiding or post-poning things you need to do or waiting for the perfect time to start something that you need to do
- Becoming very demanding or excessively seeking reassurance from others

- Looking to others to make decisions or sort out problems for you
- Throwing yourself into doing things so there are no opportunities to stop, think and reflect
- Pushing others away and being verbally or physically threatening/rude to them
- Deliberately harming yourself in an attempt to block how you feel
- Being careless, for example crossing the road without looking, cycling without lights or reflectors, or gambling with money you don't really have
- Having sex with someone you don't really like or without protection
- Compulsively checking, cleaning, or doing things a set number of times or in exactly the "correct" order so as to make things "right"
- Carrying out mental rituals such as counting or deliberately thinking "good" thoughts/saying prayers to make things feel "right"

Another very common unhelpful behaviour is avoidance. This often occurs when there is a situation that might arouse distress, discomfort or any negative feelings or where you just don't know how to solve it. Variants of avoidance are delaying, post-poning, not getting started, or procrastinating. This can backfire. The image below shows the cycle of avoidance.



Example 1: Imagine you live in a house with others. One of your housemates, who lives in the room next to you, plays loud music late into the night most nights. Your course requires you to get up early and exams are getting close. You are getting little sleep. You want to talk to him, but are worried about upsetting him. You delay talking to him, in the hope that this will sort itself out. The short-term positive consequence is that you avoid any upset or uncomfortable feelings resulting from telling him how you feel. It also results in: (1) no change in his behaviour (2) no sleep for you. In the longer term you feel worse.

Example 2: Imagine you have to pick a final year project. A list of projects and supervisors is circulated. You have to read up on the different projects offered, and send your CV to potential supervisors and arrange to meet them and prepare for the meeting. To get a good project is competitive. Your friends start contacting supervisors immediately. You want to come across well in an interview. You tell yourself that you need to do a lot of reading before choosing a project. This seems daunting and you avoid doing it. In the short-term this makes you feel a little better, because you don't have to do it now (and risk being rejected or not getting what you want) and you have a plan to do it later. In the longer term it means the risk of not getting what you want increases, as the number of available projects will reduce. This could mean more work for you, as you might need to see a larger number of people about their projects. In the meantime lots of other things have also come up that you need to do.

Example 3: Imagine you have been in a relationship for some time now. Within the past few months though, you have realised that you are not happy in this relationship anymore and that your feelings for your partner have changed. You would like break up, but feel unable to speak about that with your partner. The positive in the short term is that you avoid upsetting your partner and don't have to deal with the break-up yourself. You might also think that things perhaps will get better. In the long term you will feel more upset, as the problems in your relationship might worsen.

How to get the best out of student life

Think of a current challenge/difficult situation in your life. Draw up your own personal 5-areas assessment for this challenge. What do you bring to the situation that may help or hinder its resolution? You will have received feedback on a number of personality traits that may affect how you deal with the challenge that you are facing. Think about the two cycles of unhelpful behaviour. Is this relevant to you? If you think it is, then you may want to read on to learn about how unhelpful behaviours can be changed.

Reflection box

- Making changes in one area (thoughts, feelings, behaviours; physical experience) can affect all other areas.
- The cycles of helpful and unhelpful behaviour can help you reflect on what you do well and not so well and what the consequences of your actions are, in any tricky situation.

E.2. Perfectionism module

PLUS
Personality and Living of University Students

Perfectionism

What is perfectionism?

Perfectionism is an ongoing effort to avoid the discomfort that results from a sense of uncertainty, or danger, or judgement from others, or from imprecision. It means that you try to do something the right way and don't like it if things don't feel quite "right". There are different components of perfectionism. One key component is your personal standards, i.e. to what extent you are trying to do things better than others. Typically the perfectionist strives to do things 200% well. Another key aspect of perfectionism is being self-critical. This usually occurs when the person hasn't lived up to their standards. Other aspects are a fear of making mistakes or thoughts about having done something wrong.

How can I tell whether I'm a perfectionist or not?

Perfectionism can affect any area of your life. Students with high perfectionism often only aim for the highest grade and get very disappointed if they do not receive them. People with high perfectionism often tend to spend a lot of time cleaning things or prefer to have things organised and arranged in a particular way. Writing and speaking can be affected in the way that perfectionists are very self-conscious about mistakes (typos) or they way they speak. Some perfectionists are very concerned about the way they look and things that they might think makes someone unattractive. A key feature of perfectionist behaviours and thoughts is inflexibility. Perfectionists often struggle with compromising or adapting to situations where their own standard cannot be met. They also find it hard to cope in situations where they have to juggle multiple demands. Perfectionists are often good at tasks that require attention to detail, but may find tasks that require quick decisions and being able to see the bigger picture more difficult.

OK, I'm a perfectionist, is that a good or a bad thing?

We have found that most university students score somewhat high on perfectionism. In general, this is a good thing, because you can work In a precise and focused manner. In other words, perfectionism can improve academic performance. However, sometimes it can also make life more difficult. Some students get upset if they feel that they are not able to do something perfectly. The desire to make absolutely no mistakes can become obsessive and time consuming, e.g. if you have to check your work over and over again. Sometimes the fear of doing something not right can make students anxious and affects their self-esteem. Have a look at the pros and cons of perfectionism:

Perfectionist behaviour

Perfectionism is a trait that very much influences our behaviour and very often, perfectionists think that they need to do certain things to maintain order in their life and stay in control. These behaviours can be categorised into two groups: Behaviours that help meeting the high standards and behaviours that help avoiding a situation where you have to live up to your standards.

Examples are given below

Behaviour to meet standards	Behaviour to avoid living up to standards
Overcompensating (e.g. giving everything '200% effort') Excessive checking and reassurance seeking Repeating and correcting Not knowing when to stop Excessive organising and list making Slowness	Giving up too soon Not getting started Procrastination Difficulties in making decisions

In the introduction you learnt how our thoughts can influence the way we feel, behave and our physical sensations. Let's have a look how perfectionist thinking is connected to perfectionist behaviours and how that might affect the way you feel.

Example: Amy

Amy is a medical student and her next exam is coming up soon. She always works very hard and has done well in any previous exams. She is convinced that she has to get the highest scores possible or else she will not be able to finish her course (black and white thinking). Amy also worries that she might not pass the exam at all (Probability Overestimations). That is why Amy is very anxious about this exam (Feelings). She has trouble sleeping and her appetite is reduced (Physical sensations). For a couple of days now she hasn't done anything for the exam, as she feels she doesn't know where to start (procrastination). Now she is in the library every day from 8am to 9pm and continues to study at home until the very early morning (overcompensating).

Think about the cycles of helpful and unhelpful behaviour and how Amy's problem fits in there. Having to prepare for an important exam is the original problem. Amy's thoughts make her feel anxious and uncomfortable about her exam. She responds with different unhelpful behaviours such as procrastinating or overcompensating. Although these behaviours may reduce her anxiety a little, this will get worse over time, especially the closer she gets to the exam. Her overcompensating will also leave her totally exhausted. Let's have a look at Amy's vicious cycle of perfectionist behaviour:

PRO	CON
• Helps me to achieve things • Makes me proud of my work • Makes others value what I do	• I spend much more time on things than other people • I get very overwhelmed and exhausted • Nothing I do feels ever good enough • Others see me as fussy or critical

Are there any other pros or cons that you can think of?

Reflection box:

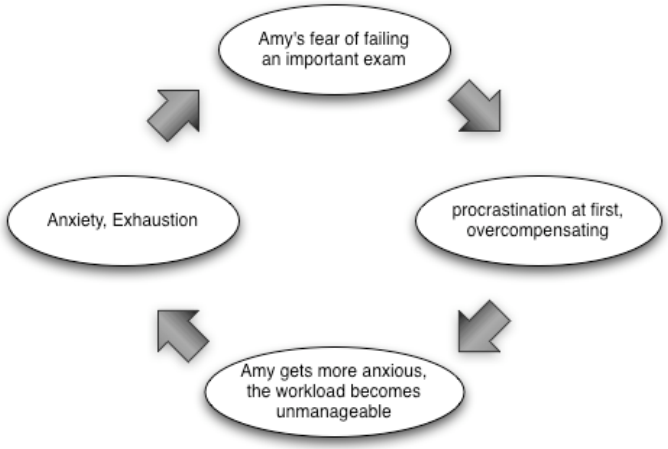
Perfectionism has a lot of up-sides and can be a characteristic that helps you to achieve the things you want to. However, being perfect in all life domains is impossible.

I think maybe I do have a problem with perfectionism- What can I do?

Have a look at the next pages to learn more about perfectionism and get some tips on how to reduce the negative impact of this on your life..

Perfectionism often goes with an unhelpful thinking style, that drives perfectionist behaviours. Examples of this are listed below

When faced with a challenge do you resort to the following?
All-or-nothing/black and white thinking (e.g. "I either give my essay preparation my all, or I might as well forget it")
Filtering (e.g. even though you knew most of the answers to the questions that the examiners asked all you focus on is the one question you did not know)
Mind reading (e.g. "My professor must think I'm stupid now")
Probability Overestimations (Although you have prepared well for an exam, you think that you will fail)
Interpersonal sensitivity (She looked at me in a funny way today)
Catastrophic thinking (e.g. "I will definitely fail this exam and then I will be chucked out of the course")
Rigid standards and inflexibility (e.g. "I absolutely need to do 8 hours of revision a day")
Need for control
Inappropriate social comparisons (comparing yourself only against people who have much more experience or expertise than you)
Constant self-criticism (e.g. "I am total rubbish at things")



Seven steps to challenge perfectionism

Amy's example demonstrates that sometimes perfectionism can make life rather difficult, especially at university. On the next pages we are going to have a look at how unhelpful or extreme perfectionist behaviour can be challenged with a simple 7-step approach. Let's look at the different steps:

1. Identifying perfectionist unhelpful behaviour

Pay attention to certain types of situations. Situations in which you have the impression that you are not living up to your own standards or situations in which others don't meet your expectations. Think about the five areas model and how these situations fit in there. Ask yourself the following questions: What are my thoughts about this situation? How does it make me feel? How does my body react? How do I behave in that situation?

The last question is very important. Try to think about whether your behaviour is helpful or not. E.g. do you show unhelpful perfectionist behaviours such as triple checking things or procrastinating? You can go back to the previous page to have a look at possible behaviours.

2. Finding alternative solutions

In this step, your job is to find alternative approaches to your current situation. This might be somewhat difficult in the beginning, as your perfectionist behaviour may seem relatively

straightforward and appropriate. However, try to imagine how someone else, a friend, your mum or dad, your professor or someone else who you trust and respect might interpret your situation and how he or she would act in it? What do your fellow students do? What works for them?

3. Advantages and Disadvantages of the original thought and behaviour and the alternatives

Think about what would speak for and against the original behaviour and the alternatives. Think about the short term and long term consequences of each behaviour and write down the pros and cons.

4. Choosing a solution

The list of pros and cons should help with choosing a solution that can be tried out. Try to find a solution that is achievable and helpful!

5. Plan the steps

Think about what single steps are necessary to take your plan into action. What obstacles could come up and how could you deal with them? Your plans have to be specific so that you will be able to tell when you have completed it. They also need to be realistic to avoid disappointments here.

Once you have made a plan, you can download the planner sheet from the link below. Put in this sheet what you are going to do, when you are going to do it, which problems or difficulties could come up and how to overcome them.

6. Carry out your plan

7. Review your outcome

How did your plan work? Have you achieved what you wanted? What was difficult and what was easy? Don't forget the 5 areas, how did your new behaviour affect the other areas? To help you review your outcome, download the review sheet from the link below. Put in what you planned to do, whether you have tried it or not, what went well or not, what you have learned from it and things that might have stopped you. The sheet can help to get the most out of your experience, even if things didn't go quite as planned.

Let's come back to the example of our medical student Amy and see how she could apply the seven steps to challenge her extreme and unhelpful perfectionist behaviour:

Amy decides that her alternating between procrastinating and then overcompensating makes things worse for her as the exam approaches. Her anxiety and stress are getting stronger and stronger instead of going down.

She comes up with several alternative solutions and their pros and cons:

Solution	Pro	Con
I could stop exam preparations now	I don't have to manage all this work.	I will fail the exam and not be able to continue to study.
I could try to really impress my professors by not just working through the key text(s) for the exam, but by reading much more widely	If I could pull it off it would be brilliant and everyone would think I am the best.	I do not have the time to do this I need to prioritize key topics I also need some breaks
I could lock myself away in my room and study 18 hours a day for the last 2 weeks before my exam. This would mean drinking vast amounts of coffee to stay awake.	It sounds tempting, because it would mean I would only have to study really hard for 2 weeks.	This will be counterproductive. I won't be able to concentrate and won't be able to sleep because of the coffee.
I could join up with my fellow students and form a study group.	They would help me to structure the workload	I'd rather work alone because it means others don't distract me and I stay in control
I could make a study plan	This would give me structure. I know if I stick to the plan, I'm well prepared.	Might be hard to stick to this. I often make longer and longer lists and they just make me procrastinate.

Amy decides that although her natural instinct is to isolate herself and study alone to stay in control, joining up with a couple of friends who are good at preparing for exams and meeting with them regularly to assess her progress, discuss difficult topics and keep up morale would be the most realistic and helpful solution for her.

Summary

Challenging unhelpful or extreme behaviour can be quite difficult, especially when it seems that you might have to do the opposite of what you normally would. In Amy's case, she decided to prepare together with others, whereas normally she would not have considered this option. However, by following the seven steps, the pros and cons of each alternative can be looked at, making it much easier to chose a more helpful alternative behaviour. In the planning stage (Step 5), Amy looked at what might get in the way of preparing with the others and she thought about how to overcome these problems. This gave her the confidence to try the alternative behaviour.

Think about other behaviours, which could be challenged using the seven steps.

E.3. Self-esteem module

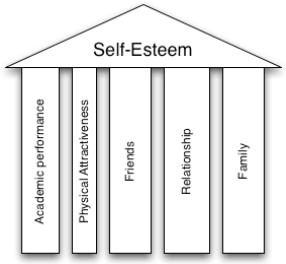
PLUS
Personality and Living of University Students

Self-esteem

Self-esteem is about whether you like yourself, whether you globally consider yourself a good person or to what extent you think you deserve love and happiness.

Self-esteem is different to confidence. Confidence is a more dependent on a particular situation, whereas self-esteem influences your life more globally. Think about an actor on stage: they are full of confidence, but do not necessarily have a lot of self-esteem off stage.

Most people have a number of sources of self-esteem in their life. Have a look at the picture below. You can imagine self-esteem like a house. Each of the columns represents a source of self-esteem. Each of these can have different importance, as indicated by their different width. The more sources there are, the more stable is your self-esteem.

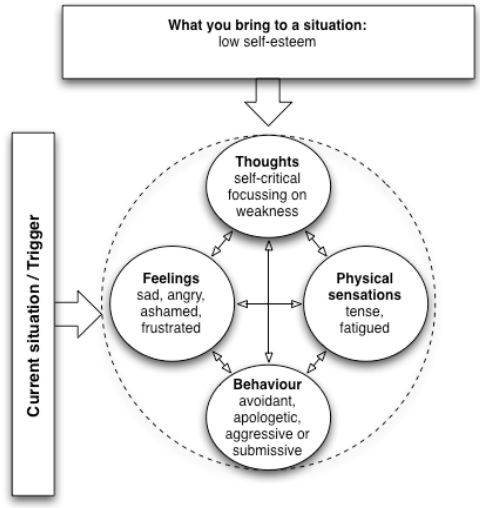


What does your self-esteem house look like? What makes you feel good about yourself? How many columns or sources of self-esteem do you have? How important is each of them? Download the worksheet below and put your sources of self-esteem in there.

Self-esteem plays an important role in terms of our well-being and health. Low self-esteem arises when a person's self-esteem house is imbalanced, with only one or few stable columns.

Low self-esteem can affect many aspects of your life. Your studies/work may be affected in a way that you either avoid challenges and under-perform or work excessively hard in a perfectionist driven way (You can learn more about that in the module on perfectionism). In your personal relationships you may be self-conscious, oversensitive or try to please everyone to be accepted. In your spare time you might not enjoy activities because you think you don't deserve them. You also might not take care of your self and not give yourself a rest or use drugs or alcohol.

Let's revisit the 5 areas assessment to see how low self-esteem affects a person's thoughts, feelings, behaviour, and physical sensations.



Thoughts: Have a look at the following thoughts, which are typical when people have low self-esteem.

- Being excessively self-critical out of proportion with a situation
- Blaming myself when things go wrong
- Focusing on my weaknesses rather than my strengths
- Ruminating/dwelling on being useless, lazy, bad, ugly etc.
- If I do something well I tend to attribute this to chance or to something outside my control
- Having doubts about what I've done
- Feeling I don't deserve it when nice things happen
- Comparing myself negatively against other people

Do you experience these thoughts? How do they make you feel?

Feelings: Unsurprisingly, a lot of different negative feelings go along with the above thoughts.

Physical sensations: You might feel tense, anxious, restless or fatigued

Behaviours: Behaviours that go with low self-esteem typically are being apologetic, pleasing others, submitting to others' wishes or opinions or being avoidant of challenges.

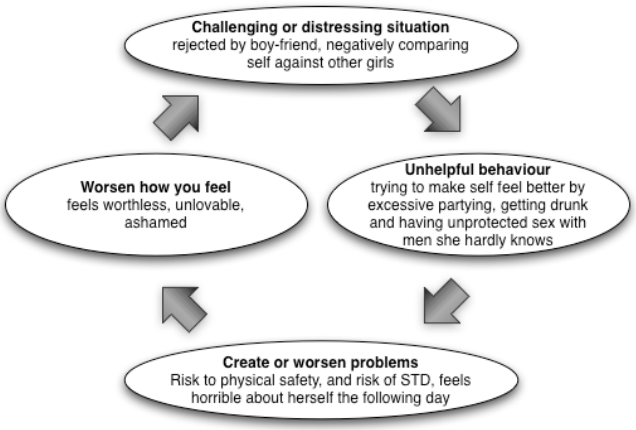
Let's look at some examples:

Danielle

Danielle is a literature student and has never really felt acceptable. She thinks most other girls are more attractive and successful then her. Danielle's boyfriend recently left her for another girl, who she thinks is prettier and smarter than her. That has made her feel even worse about herself. To

compensate for feeling so bad, Danielle has started partying excessively and putting herself at risk by having unprotected sex with men she doesn't even like.

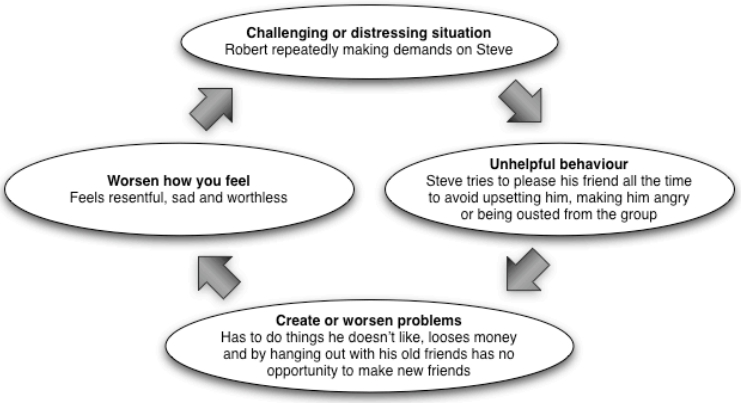
The picture below shows Danielle's vicious cycle of unhelpful behaviour:



Steve

Steve is an IT student. He is pretty shy, so rather than making new friends, he often spends time with a group of old friends he knows from school. Robert, who is confident and bossy is the unofficial leader of this group, and when the group meet up he usually decides what they'll do and where they'll go. Robert is always hard up, so Steve will often have to pay for him, when they go out, but doesn't always get his money back. As Steve is the only one of his friends who has a car Robert also expects him to drive when they go out. Steve very often finds himself doing things to please Robert although he doesn't really like to do them. Steve doesn't want to upset Robert or the other members of the group by saying no to things.

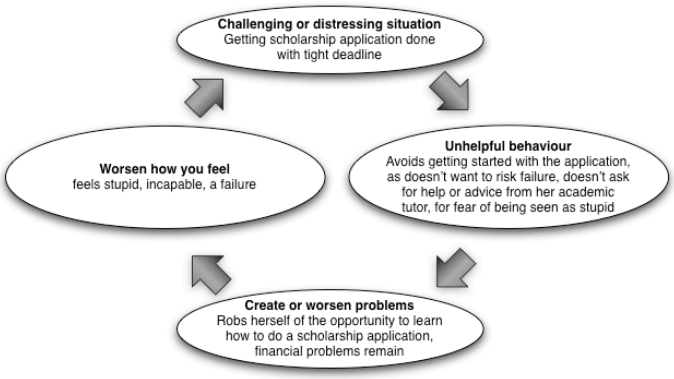
The picture below shows Steve's vicious cycle of unhelpful behaviour:



Li

Li is a biochemistry student from Singapore. She has always strived for excellence. Although she has performed well at school and university so far, her self-esteem is low. She would like to apply for a scholarship to help her with her finances. She struggles with getting started with the application, as she is convinced that she won't get the scholarship.

The picture below shows Li's vicious cycle of unhelpful behaviour:



The examples demonstrate that low self-esteem can affect all areas in life. You may also find similarities to the examples in the perfectionism module. High levels of perfectionism can be linked with low self-esteem. You can learn more about perfectionism in the perfectionism module.

One of the most important thinking processes that lower self-esteem is excessive self criticism. In the next section, we are going to look at how to challenge this and improve acceptance.

Self-esteem and excessive self-criticism

Being able to honestly assess your own behaviour and acknowledge and take responsibility for things that haven't gone so well is an important skill. People with low self-esteem do not usually judge themselves fairly, but are harshly critical of themselves. This can take the form of a constant inner negative running commentary on all your actions, telling yourself off for even the most minor things. In addition it often involves negative judgements about yourself as a person, including thoughts such as "I'm useless", "I'm stupid" or "I'm unlikeable". Criticising yourself about everything can make life very hard. Think about the short-term and long-term consequences of this.

In the short-term, being intensely self-critical might spur you on to do things differently, as it seems to give you information about what to do better or what not to do. In the long-run it will drag you down and make you feel worse about yourself. This will reinforce your self-criticism, will prevent you from making positive experiences and and is unfair. Hence, one key to improving self-esteem is to challenge excessive self-criticism.

How to challenge excessive Self-Criticism

Self-criticism can be challenged by looking at the situation that evoked this from different perspectives. Instead of being harsh or critical about yourself, it is important to learn to be more balanced, fair, understanding and kind to yourself. This will probably seem like quite a difficult task and the following writing exercise may be of help. To do this properly you will need to set aside 15 to 20 minutes of time.

Think about a recent event when you were very critical about yourself.

1. Take a piece of paper and write about the situation in terms of what happened, who was involved and what you thought and felt about it at the time. Try to write for about 5 minutes or so. (It is best to write this by hand rather than on the computer, because that makes it easier to connect with the feelings you had at the time)
   Try to answer the following questions in the text:
   - What happened in the situation?
   - Who else was involved?
   - What did you do?
   - How did you think and feel about what you did?
2. Spend some time looking at what you have written. Can you identify your self-critical thoughts in your writing?

This exercise has been adapted from one of the writing exercises developed by Professor James Pennebaker and is described in his book "Writing to Heal". Professor Pennebaker has for many years conducted studies on the helpful aspects of writing about personal experiences, and has shown that such exercises improve many different aspects of students' lives, such as health and academic performance.

Let's have a look what Li wrote:

Yesterday was the only day of the week I had free from lectures, so I thought it would be a good time for me to sit down and get the scholarship application done. I got up early intending to do this, but in the end I spent the entire day doing other things on the internet and didn't even make a start. By dinner time I was totally frustrated. I thought this has been the first day for some time where I have had time to do this and I didn't even manage to make a start on it. I probably won't get the scholarship anyway, but I definitely won't if I don't even send an application. I am a complete idiot who can't get her act together, lazy, and useless.

3. The next step is to write about the same situation again. However, this time write about it from another person's perspective. That could be someone who was actually part of the situation or simply someone who could have just watched. Most importantly, the observer should be completely fair. You may find it helpful to imagine a close friend or a family member being that person, but if you think no member of your family or friend would be completely fair you could imagine someone else such as a teacher, minister, therapist, coach or judge. Write again for 5 minutes only and try to answer the questions above, just this time with an objective and fair perspective. How would this other person think about what you did or said in the situation? This is what Li wrote in this exercise, imagining her housemate's perspective:

Li got up early, even though she didn't have lectures today. She told me it was because she needed to prepare a scholarship application to help cover her tuition fees. I saw her spend some time on the scholarship application website and going through the instructions on how to complete the application. She also spent some time doing things that didn't look like the application as well. I guess she must feel quite anxious about this application, I could tell as she kept saying she didn't think she would have much chance of getting it and she has never done anything like this before. Writing any sort of application is quite a tough job, especially if English is not your first language. She probably feels a bit overwhelmed and doesn't know where to get help. But I think it's good that she at least looked into the application process. Maybe tomorrow it will be a bit easier for her to get something down on paper after her preparations today…

4. The next step of this exercise is to write about the situation one further time. This time write from the perspective of a wise and compassionate person, someone who really understands you and is kind and accepting. Again this can be a real person in your life or someone who you imagine being like this. Again write for 5 minutes.

Li got up early, even though she didn't have lectures today. She told me it was because she needed to prepare a scholarship application to help cover her tuition fees. She is a bit nervous about the application, as the scholarship would really help her with her finances, but I can see that she struggles with completing it. Li always works very hard and often doesn't give herself credit for it. I think it's good that she made a start today by looking up the requirements for the submission. I can imagine how hard it must be for her to do this application in another language, but I'm sure she can complete it soon. Li wanted to finish the application today and is now disappointed that she has not been able to do so. I don't think she should be upset, as she tried and made a start today. She often sets her standards very high and forgets that she is working very hard and that she is doing well. I think Li would deserve the scholarship and I know she can finish it.

5. Lastly, write about the situation one more time. This time write from your perspective again. Just like before, try to write for 5 minutes only and try to answer the questions above. Did you notice any differences? Has your perspective changed? This is what Li wrote from her own perspective again:

Yesterday was the only day of the week I had free from lectures, so I thought it would be good for me to sit down and get the scholarship application done. Although I got up early and spent some time looking up what to do, I spent an equal amount of time doing other things on the computer and that had nothing to do with the application. I was really frustrated by dinner, because I hadn't completed the application as I had imagined I would. Thinking about it now, it was probably a bit ambitious. Even though I didn't manage to get anything written down on the application forms, I have a much better idea in my head about what I need to do. Perhaps I didn't need to get as frustrated as I did.

It doesn't happen overnight, but doing this exercise can help you gain perspective in different situations and being less self-critical. In Li's example it made her feel less frustrated about herself and also increased her motivation and confidence for getting the application completed.

Reflection box

Excessive self-criticism is an unhelpful behaviour that lowers your self-esteem. It can be challenged by identifying it and the unhelpful, self-defeating behaviour linked to it and taking a different, fairer and more compassionate perspective. You may want to practice the writing exercise a few times applying it to different situations, to break the habit of constant self-criticism.

Self-esteem and acceptance

You now have learned how you can challenge rxcessive self-criticism, an unhelpful behaviour that lowers self-esteem. In the following section we want to have a look at your self-esteem house again and see whether you can do some restructuring. In particular, we want to show you a way of adding more supports to your self-esteem house.

One very effective way to improve self-esteem is to do the opposite of excessive self-criticism: being fair to yourself and acknowledging and accepting your strengths and good points. Ok, this may sound a bit odd and when you think about people who praise themselves or brag about their achievements, you most likely won't think highly of them. However, being able to acknowledge your strengths and good points in a balanced way is important and can improve your well-being.

Let's start by making a list of your positive qualities: Take a piece of paper and a pen or simply create a new text document on your computer. Now make a list of your positive qualities. This may not be easy, but the following questions may help you:

- What do you like about yourself? (anything, physical or personality, however small)
- What have you achieved in your life so far?
- What challenges have you had to face in your life?

- What gifts or talents do you have?
- What do your friends or family like about you?
- What are bad qualities, which you don't possess?

Try to find at least one answer to each question. Once you have completed the list, take a look at it and read it slowly. How does it make you feel to see these positive things about you?

This list is just the beginning. The next step is to practise recognizing the good aspects of you on a daily basis. Perhaps you could get yourself a plain notebook, which is going to be your little book of good things about you over the next few of weeks. The key for this to work is as much as possible to write good things down when you notice them. This should include even the smallest and most insignificant seeming things that you notice. Once you have written something positive down think about what it says about you in terms of the characteristics that have helped you with this or what it says about you with respect to a particular role (student, friend, girl-friend, neighbour, son, daughter etc). Once this becomes a habit, you might not need to write it down anymore. One consequence of excessive self-criticism often is that perceiving the positive aspects becomes very difficult. The "good things about me" notebook can help regaining perspective.

Here is what Danielle wrote about herself:

Thursday 20th of Jan 2011

- Got out of bed and managed to get myself to university on time even though I felt totally tired and generally rubbish. (shows determination)
- Managed to keep quite good notes in the lectures I went to, had to try hard not to drift off into day-dreams. (good student, again v determined).
- Listened to my friend Rose who was very upset about her mum being ill. (warm compassionate human being).

Self-esteem and communication

People with low self-esteem often have trouble with communicating their needs and feelings. In this final section, we will take a look at three different styles of communication and how these are linked with self-esteem: a) being submissive or passive, (b) being aggressive, and (c) being assertive.

Submissiveness/ Passiveness

Being submissive to others is often linked to low self-esteem. Think about how often you do the following behaviours:

- Saying yes, when you actually mean no
- Doing things for others, although you are really busy yourself

- Repeatedly being someone else's first port of call when they have a problem even though they are never interested in your problems
- Trying to please others and wanting to make things right for them
- Avoiding expressing your own wishes, needs, expectations or opinions

These behaviours could be indicators of a rather submissive style of communicating with others. Think whether this is helpful or unhelpful. What are the short term and long term consequences?

Being submissive or passive can be positive initially, because it makes you feel good if you can help others and you can also avoid difficult situations with others. In the long term it can get very frustrating if you put other peoples' needs above yours and your self-esteem reduces. Low self-esteem reinforces the idea that your needs might not be as important and that others should come first. Others will also notice your "helpfulness" and approach you with things more often, this can make you feel increasingly overloaded and resentful. A pleasing or submissive style of communicating with others can become a vicious cycle of unhelpful behaviour.

Aggressiveness

Some people think that being aggressive is important to get your own way. An aggressive style of communication can include being rude, interrupting or ignoring others, shouting, or being disrespectful. In the short term, people who communicate aggressively may get their way, at least sometimes. In the long run, however, others either start avoiding them or fight back. Being isolated and ignored might make the aggressive person even more aggressive, but perhaps also angry and sad. In people with low self-esteem aggressive communication is often the flip-side of being submissive and feeling resentful and angry about others taking you for granted or using you. Others may be surprised that their usually mild-mannered friend suddenly erupts in a seemingly out of proportion way. The person themselves may feel ashamed about their outburst and behave more submissively to make up for this. A vicious cycle arises.

Reflection box

People with low self-esteem often flip between submissive/passive and aggressive communication. This can become a vicious cycle of unhelpful behaviour.

Assertiveness

Assertiveness can be described as the middle way between aggressiveness and passiveness. People with an aggressive communication style mostly care about their own needs, whereas people with a submissive style of interacting primarily care about other peoples' needs. Assertive communication means that you are able to communicate your needs and at the same time respect the needs of other people.

In the introduction, you have learned about the five areas assessment model and how our thoughts, feelings, physical sensations and behaviour are connected. Let's see how that model applies to situations in which someone is aggressive, passive or assertive.

Being assertive is quite easy if you can stick to a few simple rules:

I have the right to:

1. Respect myself - who I am and what I do.

2. Recognise my own needs as an individual

This is really just about your own needs and not the things that someone might expect from you, e.g. in your role as a friend or a student.

3. Make clear "I" statements about how I feel and what I think. For example, "I feel very uncomfortable with your decision".

4. Allow myself to make mistakes. Recognising that it is normal to make mistakes.

It is completely normal to make mistakes and we all make them. However, it is important that you don't beat yourself up about having made a mistake. A useful way of thinking about this is encapsulated in the following saying ' every mistake is a treasure'. This means that instead of beating yourself up about a mistake you allow it to happen and think about what you can learn from it. Another useful way of thinking about mistakes is encapsulated in the words of the Jazz musician Thelonius Monk who said – 'there is no such thing as a wrong note'. This kind of assumes that life is all about improvising and managing uncertainty and that a shrill note or out of tune sequence can be recovered from and the beginning of something new and exciting.

5. Change my mind, if I choose.

Similar to making mistakes, it is completely normal to change your mind. Sometimes we make decisions based on different information or mood or because we feel pressured to. The freedom to change your mind is important for respecting your own needs.

6. Ask for "thinking it over time". For example, when people ask you to do something, you have

the right to say "I would like to think it over and I will let you know my decision by the end of the week".

Before making any decision, it's important to think about it for a while, gather information if necessary or consider alternatives. Asking for thinking time helps to avoid uncomfortable situations in which you make decision because you feel you have to that you later might regret.

7. Allow myself to enjoy my successes, that is by being pleased with what I have done and sharing it with others.

Be proud of your achievements and don't be afraid of sharing it with others.

8. Ask for what I want, rather than hoping someone will notice what I want.

Nobody can look inside you and simply mindread what you want or need. Make sure to be open about what you want in a situation or from others.

9. Recognise that I am not responsible for the behaviour of others.

Sometimes we feel responsible for things that we are not really responsible for, especially in situations of stress. The feeling of not being able to change something although we think we should can make things even more difficult. Remind yourself that sometimes things are out of your control.

10. Respect other people and their right to be assertive and expect the same in return.

Don't forget: Assertiveness is about respecting your own and other people's needs. Just like you, other people have a right to be assertive.

Assertiveness tools

Let's have a look at three techniques that can help you being assertive:

1. Saying no,
2. the broken record technique and
3. scripting.

Saying no

Saying 'no' can be quite hard at times, because it can make us feel as if we are rejecting someone and some people seem to almost never say no to anything or anyone. However, think about this in terms of unhelpful and helpful behaviour. In the introduction, you have learned that unhelpful behaviour can seem useful in the beginning, but makes things worse in the long term, whereas it is the opposite with helpful behaviour.

Think about what happens if you find yourself saying yes, although you actually mean no. Initially, it might feel as if you have helped the other person and might get acknowledged for that. Or you

can avoid conflict with another person. In the long run you might regret your decision and have to do something that you did not want to do.

When it comes to saying no, it is best to be straightforward from the very beginning. Think about why you don't want to do something and tell the other person. Try to avoid apologising or giving long explanations about why you don't want to do something. Think about the rules for assertiveness: it is your right to say no, change your mind or tell what you need or don't need. Being honest in a situation like this is much easier than it will be if you end up regretting your decision or struggling with the task you agreed on doing.

The broken record

The broken record technique is a technique in which you repeat an important message over and over again. Now this might seem a bit simple and cheeky, but it is also extremely effective in any situation. Think about what you want to say and even prepare a line of what you could say. Repeating the same message over and over is particularly useful when you encounter a situation in which someone else is trying to push you to do something you don't want to do or if they try arguing with you. Listen to the example below to hear the broken record technique in action.

(Rob and Laura are at a party; Laura has an important day tomorrow and does not want to get drunk)

Rob:	Laura, I'm going to the bar, would you like a beer?
Laura:	Ah, no thanks, I don't want to drink today.
Rob:	Oh come on. No drinks? Are you kidding?
Laura:	No, I have an important day tomorrow and I don't want to drink today.
Rob:	But it's a party, everyone is having one here.
Laura:	I know, but I don't want to drink today
Rob:	Hey, how about just one, I'm paying.
Laura:	Thanks, but I don't want to drink today.
Rob:	Ok, can I get something else then? Perhaps a juice?
Laura:	Yes, please. Orange.
Rob:	OK, I'll be right back.

Notice how Laura simply repeated her statement again and again without getting into arguments, providing long explanations or apologising for her decision. Eventually Rob accepted her decision.

Scripting

The last technique to help you being more assertive is scripting. Scripting is a way for asking what you need and based around 4 headings: Event, Feelings, Needs and Consequences (If you find this difficult to remember: think of **FENC**E).
Under the **E**vent heading, you need to talk about the situation you are referring to.
Then you can talk about how this particular event has affected your **F**eelings. You might find it difficult to articulate your feelings, but remember: opinions can be argued with, feelings not. Try to be as precise as possible when describing your feelings to avoid confusion.

The Needs heading covers your needs. Remember the rules of assertiveness? One of them says that you need to say what you want. Other people cannot mindread, so you should exactly tell them what you need.
In the last step, you should talk about the Consequences. In many cases the fulfilment of your needs has positive consequences for both of you, which should be pointed out.
Let's have a look at an example of a conversation in which the scripting headings were followed.

Christine and Paul live in a house share. Paul's room is next to Christine's and lately he has been playing music very loudly until late in the night making it very hard for Christine to get enough sleep.

Christine: Paul, last week we spoke about you having the music on too loud all night. Last night you again had it on really loudly until 4 in the morning and I could hardly sleep. (EVENT)
Paul: Yeah, I know, but I had the day off today and didn't feel like going to bed early. I didn't think you'd mind.
Christine: I find it really hard to have to tell you this again and it makes me very upset that you just don't think about how thin the walls are here and what effect it will have on me. (FEELINGS)
Paul: Sorry, I just didn't realise it.
Christine: Well, I want us to get on and I don't want this to affect our friendship, I think it's important that we sort this out and I need to be able to sleep after midnight. (NEED)
Paul: OK fine, I'll remember to use headphones from now on after midnight.
Christine: Thanks, I really appreciate it and this way you can keep listening to music and I can get some sleep. (CONSEQUENCES)

Reflection box

Saying NO, the broken record and scripting can be helpful techniques for being assertive with others.

Think about a situation where you could try to be more assertive. Download the planner sheet and the review sheet from the link below. Put in the planner sheet what you are going to do, when you are going to do it, which problems or difficulties might come up and how to overcome them. To help you review your outcome use the review sheet and put in what you planned to do, whether you have tried it or not, what went well or not, what you have learned from it and things that might have stopped you. The sheet can help to get the most out of your experience, even if things didn't go quite as planned.

E.4. Anxiety and worry module

PLUS
Personality and Living of University Students

Anxiety and Panic

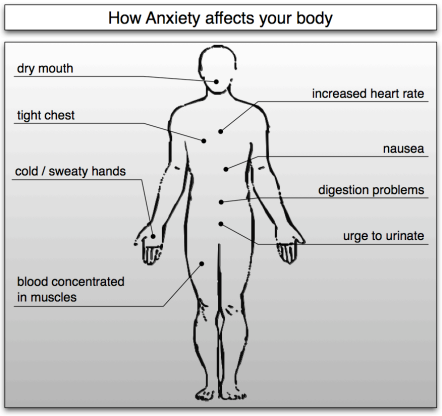
Anxiety is the reaction of your body and mind to dangerous situations, threats or anticipated threats. When you encounter a dangerous situation, your body produces adrenaline, which causes a number of physical changes. The fact that our body reacts in such a way is a very useful evolutionary mechanism and allows us to act appropriately in a threatening situation.

Remember the 5 areas assessment approach? Anxiety is a state, which affects your body, your thoughts and your behaviour.

Body: Physical sensations caused by anxiety can include an increased heart rate, sweating, feeling sick, digestive problems, and feeling dizzy, tired or tense. When you feel anxious, your blood is pumped into your arms and legs for your body to respond quickly. All these physical experiences are normal and prepare your body for dealing with potentially dangerous situations.

Thoughts: When you are anxious, your attention is focused on potential threats in the situation or the environment. Some people also experience normal physical sensations as threatening (e.g. fast heart beat – "I must be having a heart attack"). This creates anxiety and intensifies physical reactions. This vicious cycle can contribute to the development of problems with anxiety.

Behaviour: In the introduction section, we introduced a common unhelpful behaviour: avoidance. Anxiety is one of the most common reasons why people develop avoidance. The situations that are avoided are usually situations in which they have experienced anxiety before, situations, which could induce physical sensations similar to the ones experienced when you are anxious (e.g. doing sports) or situations in which getting help seems more difficult (e.g. on the tube, in crowded places).



In moments of fear and anxiety, we react in three different ways: fight, flight or freeze.

Fight: A stranger repeatedly approaches you inappropriately in a pub. You push him away forcefully and shout at him to go away.

Flight: You are walking through a park in the dark and suddenly notice something rustling in a bush next to you. You quickly run away.

Freeze: You are crossing a road and suddenly notice a car coming around the corner. For a fraction of a second you startle and freeze on the middle of the road and then quickly move on.

Reflection box

In dangerous or threatening situations, we respond with anxiety. Anxiety causes normal physical symptoms and affects our thoughts and behaviour.

However, sometimes anxiety can also be a false alarm and we react anxiously to situations in which there is no threat or danger and experience what is called a panic attack. Very often, people experience their first panic attack at times when they are stressed or after major life events. A key factor that contributes to this is anxiety sensitivity:

- Anxiety sensitivity: Some people are very sensitive to physical sensations of anxiety. They might interpret a racing heart as a sign of an impending heart attack or that they are "going crazy". This anxiety sensitivity is like a very sensitive fire alarm, which goes off all the time.

Some people are temperamentally more anxious than others. This means they have a tendency to respond to minor threats or situations that are ambiguous or uncertain as if they are a major threat. Factors contributing to this are:

- Self-doubts: When you have doubts about your abilities or think you can't meet expectations, you will more likely experience normal situations as threatening. You can learn more about how to challenge this in the modules on perfectionism and self-esteem.
- Wanting to control the future: Some things are out of our control and trying to control those can make life really difficult. We are going to have a closer look at how to tolerate uncertainty in the section on worry below.
- High self-expectations and fear of failure: Having very high expectations for your performance can mean that many situations are perceived as an opportunity for failure. In the module on perfectionism, you can learn more about the impact of perfectionism and how to challenge it.

When these factors come together, some people respond to mildly negative or ambiguous events in a similar way as they would to a major threat or danger. Furthermore, they worry, which fuels anxiety.

Worry

Everyone worries from time to time and it is a completely normal experience. Worry is typically triggered by uncertain situations. However, just like with any other behaviour, worrying excessively can make life really difficult. People, who describe themselves as worriers do so,

because they worry pretty much all the time about a lot of things. A related concept is rumination. Whilst worrying is mainly to do with thinking about things that are in the future and making predictions, ruminating means dwelling on something that has happened in the past. Often the two go together in that someone ruminates about a mistake they made and then worries how this will affect them in future.

Although worrying about things is perceived as unpleasant and pointless by some people, others feel that worrying is necessary and even helpful. So who is right?

Think about whether worrying is a helpful or unhelpful behaviour. The short-time consequences of worrying are that you feel prepared and protected, that it motivates you to deal with situations responsibly. Worrying may also to some extent reduce anxiety and other difficult emotions. Thus, some degree of worrying can be appropriate and helpful. In the long run, however, it is more likely that worrying, especially if excessive, will keep you constantly feeling tense, stops you from recognising and dealing with underlying feelings and thoughts and makes you procrastinate. When you worry, you collect biased information about situations (typically only negative) and make them even more uncertain than they seemed before. Hence, chronic, excessive or catastrophic worrying is an unhelpful behaviour.

Most people worry about relationships, achievements, finances or health. Interestingly, research on what people worry about suggests that people, who worry excessively, worry about the same things as people who don't worry as much, but do so more often and with higher intensity. Students worry most about their personal achievements (grades), the way they look (e.g. weight, shape) or are, their financial situation or their relationships with others (e.g. loneliness).

Reflection box

Some degree of worrying can be appropriate and helpful. Chronic or excessive worry is an unhelpful behaviour.

Let's have a look at an example of how two different students handle their exam worries:

Emma and Dave are first year anthropology students and both are due to sit the same exams in the next month. Both have so far done well in their course.

Emma worries constantly about the exams. She is frightened that she will fail and won't be able to continue her course. She thinks if she fails, she may have to leave university and will never find a job. After pushing thoughts about the exam away for some time, Emma has now started preparing and finds it very difficult. She is constantly checking how her friends are preparing and their different approaches confuse her. Emma also tries to prepare for every topic to absolute perfection, which takes very long and makes it difficult for her to finish everything in time.

Dave is worried that he might not be able to read all the literature in time or that there might be questions about topics from lectures he has missed. Dave downloads the lecture notes for those lectures and asks some of his friends for their notes. He also makes a list of the literature and divides it into units so that he exactly knows how much to read each day.

The case of Emma and Dave demonstrates that people can worry with different intensity and have different strategies for dealing with worry, some of which are more helpful and productive than others.

Before we tell you how you might tame and manage your worries it is important to learn about strategies of handling worry that don't work, i.e. keep you stuck with worry and even fuel this.

Top 10 worst strategies for handling worry:

1. **Seeking repeated reassurance:** If you worry about something, it is likely that you will turn to others to seek support and reassurance which can be helpful. However, repeatedly asking for reassurance about the same thing usually does not work, as it is likely that you will doubt the reassurance later e.g. repeatedly asking your girl friend whether she still wants to be with you, or repeatedly asking your friends whether you look fat in certain clothes, or going to different doctors, because you are convinced something must be wrong with your health.
2. **Trying to stop your worrying thoughts:** For a moment, try not to think of a pink elephant in a ballet dress. And? Did it work? Most likely not, as trying not to think about something usually makes it even worse. Even if for a short time you are able to avoid a worry through suppressing it, it will usually pop up again with a vengeance when you least expect it.
3. **Collecting information:** When you worry about something, you are trying to anticipate what could go wrong and how to avoid this. Collecting information therefore is often a sensible first move. However, this is only useful if the information you obtain is unbiased. When you worry about things, you are more likely to collect negative information only or overestimate risks. So if you do collect information try to look out for the positives too.
4. **Multiply checking things:** Checking repeatedly only decreases worry or anxiety for a short time. After a while you feel like you have to check again. This becomes a cycle of unhelpful behaviour.
5. **Avoiding discomfort:** In the introduction, you have learnt about a particular type of unhelpful behaviour: avoidance. Avoiding unpleasant situations that make you worry may be useful in the short-term, but in the long run your worries increase. A variant of this is numbing yourself with alcohol or drugs to reduce worrying.
6. **Overpreparing:** Trying to be prepared for every eventuality is a common response to excessive worry. However, it consumes time and effort and therefore is rather unhelpful.
7. **Trying to always make a good impression:** Trying to always look perfect, perform well and be nice are common behaviours people do because they feel insecure or awkward and don't want other people to notice.
8. **Using Safety behaviours:** Safety behaviours are behaviours that make you feel better for the moment in a situation of stress or anxiety, such as always choosing a seat close to an exit in case a fire or panic breaks out.
9. **Demanding certainty:** Worrying is about not being able to tolerate uncertainty and by looking for certainty it seems possible to reduce anxiety. However, because it is difficult to find absolute certainty, the search for it increases your worries.
10. **Refusing to accept your thoughts:** Everyone has strange thoughts at times. People, who worry, often think that this is a sign of something being wrong or them losing control.

Dealing effectively with worry

In this section we will have a look at a number of strategies that will help you to challenge or manage your worries. However, to make the most out of these techniques, you need to investigate your worries in more detail.

Step 1: Your worry diary
To challenge your worries it can be really helpful to create a worry diary. This helps you identifying the content of your worries, times when you worry more than others and the consequences of your worry on your behaviour.

To help you with that, you can download a worksheet here. When you record your worries, it is important that you pay attention to the aspects of the 5 areas assessment model from the introduction: your thoughts, your feelings, your behaviour, your physical sensations and how they interact with each other.

- Timing: Write down your worries in detail as soon as they occur. If this is not possible, make a mental note of what your worry was about and the situation in which it occurred. Perhaps you can jot it down on a post-it note or type it into you mobile.
- Worries: Write down anything you worry about. Nothing is too trivial.
- Your thoughts: Write down any thoughts that go through your head, even if they make you feel a bit anxious or seem a bit silly. If you feel like you don't want to write down a particular thought it is probably because this thought is an important one.
- Your feelings: How does it make you feel when you worry? Was that feeling there before you started worrying or did your worries induce that feeling?
- Your behaviour: What do you do when you worry? Do you engage in any particular behaviours and do these reduce your worry or increase them?

Recording your worries needs practise. You may not always find it easy to recognise what your worries are when you feel anxious. However, with time this will get easier. Try to record your worries at least for three days. Once you have done that, set aside some time to look at your worry record and try to answer the following questions:

- Are there times when you worry more? Are there any triggering events?
- What feelings do you experience before you worry?
- What are your predictions about what might happen and what upsets you?
- What do you do after worrying and how does it make you feel?

Step 2: Identify productive and unproductive worry
As mentioned above worrying can be helpful or unhelpful. We can think of this as unproductive and productive worry. Whereas productive worry helps you to solve problems and leads you to take action doing this, unproductive worry just keeps you stuck without leading to action. Unproductive worrying is often characterised by people worrying about unanswerable questions,

such as: “What if I have a brain tumour?”, “What if the economy collapses?” or “What if he only says he loves me, but doesn’t really?”.

Hence, instead of trying to stop worrying (which will most likely not work anyway) learn to worry more effectively.

Let’s have a look at how to identify productive and unproductive worry.

Ask yourself the following three questions:

1. Is the problem I am worrying about plausible and reasonable?
2. Can I do something about it right now?
3. Can I quickly move away from worrying and find solutions?

Is the problem plausible and reasonable?

Imagine you have an exam coming up and need to prepare for it. In that situation it is perfectly reasonable and plausible to worry about the amount of preparation, the time left until the exam or how to get the necessary literature. However, it wouldn’t be plausible or reasonable to worry about failing your course and being unemployed if you don’t do well in this exam or about your email breaking down in which case you might miss out on an important email about the exam time and location.

Can I do something about it right now?

If you examine your worries, you will soon realise that unproductive worries are usually about something you can’t change at all or at the moment. To worry productively, it is important that you can do something about the problem or situation right now or at least very soon. In the example above, you could plan your preparation period and go to the library to find the necessary literature.

One of the characteristics of unproductive worries is that they focus on the future and include a catastrophic chain of events. Have a look at the example above again. The thoughts “I’m going to fail the exam”, “I’m going to fail my course’ and “I’m going to be unemployed” “I’ll never find a job” describe an escalating sequence of events. This makes worrying more difficult, as you suddenly seem to have to worry about several problems at the same time. To challenge worries, think about what you can do about the problem right now or very soon.

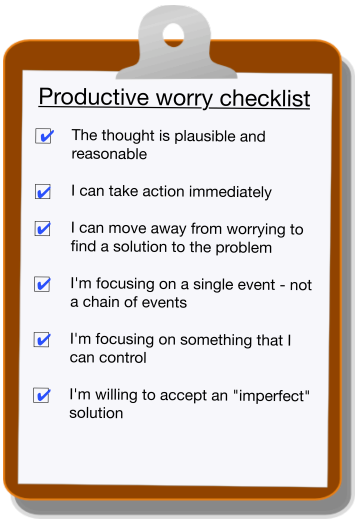
Can I quickly move away from worrying and find solutions?

Worrying productively means that you can move away from worrying quickly and actively find solutions for the problem. Taking action reduces worry.

However, when trying to find solutions, it is important that you are able to accept seemingly imperfect solutions. Worrying is maintained by the tendency to look for the perfect solution to a problem, such as “I need to know absolutely everything for this exam”. As this is impossible, you will keep worrying. Just like you do with any behaviour, think about the short- and long-term consequences. Demanding a perfect solution first of all will not solve the problem and secondly

makes you feel helpless and depressed. Not taking any risks also means that you will miss out on opportunities for success.

In the module on perfectionism you can learn more about a simple 7-step approach to problem solving. This approach can be used with any problem and may help you take action when you worry about a particular problem.



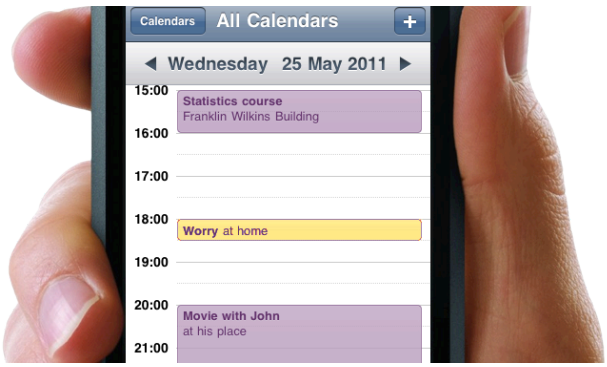
Reflection box

To help you deal with your worries, it is useful to make a worry diary and to identify when a particular worry is productive or unproductive.

Step 3: Techniques for dealing with worry.

Technique 1: Postponing worries
People, who worry excessively, often have the feeling that their worries are uncontrollable (and things that can't be controlled are not good for a worrier…). One helpful way of dealing with unproductive worries is to set some time aside for worrying. This may sound a bit funny and counterintuitive, but as we have seen, worries can keep your mind busy without actually solving any problems. By setting aside some time for worry, you can postpone the worry and get things done. For the next couple of days, set aside about 15 minutes at a convenient time for yourself, e.g. in the evening (not: on the tube, when I eat…) to worry about things. When you find yourself worrying at other times, postpone until your dedicated worry time. It may also be helpful to pick a particular location in the house. What do you notice about your worries? Are you worrying about lots of things or just a few things again and again? There may be times when you feel like you can't

fill 15 minutes with worrying and that is fine. With time, this technique will give you some control over your worries.



Technique 2: Distraction
We have learnt that worries can keep your mind busy without getting anywhere. One reason for this is that we can only really focus on one thing at a time. However, we can use this fact to reduce your worries, too. One very simple and effective technique to deal with unproductive worry is to distract yourself. For this to work, your distraction should require a fair bit of attention, be interesting for you and quite specific. You could distract yourself by doing something physical, refocusing, or mental exercise:

- Physical distractions could include taking a walk around the block, drawing something, or playing with a Rubik's cube. If you cannot move around in a situation, try rearranging your bag or look through your diary for upcoming pleasant events.
- Refocusing could involve finding 10 different colours, 10 different textures and 10 different objects in the situation you are in (you can make up your own categories as well). You could also try to remember a nice holiday or a positive event or a beautiful place you experienced and describe this to yourself in detail, how this started, what happened next, who was there, what you saw and so on, really trying to recreate this in your mind.
- Mental exercise could involve filling out Sudokus, planning how you would spend the lottery jackpot or reciting a poem.

Think about what other strategies you could try. You should try to identify some distractions that work well for you and over time build up a repertoire of different strategies for different occasions.

Technique 3: Gaining a more realistic perspective
If you worry a lot, you are most likely used to thinking about what could possibly go wrong in a situation and worst-case scenarios. Another useful techniques to challenge your worries, is to also think about the best-case scenario in a particular situation and to combine these two scenarios to a more realistic view on the situation.

Let's have a look at an example.

Diane is a 3rd year philosophy student and lives with her boyfriend. The two have been together for two years, but recently their relationship has changed a lot. Diane and her partner argue a lot and try to avoid each other most of the time. They are not having sex anymore and Diane thinks her partner might be seeing someone else. She's not happy in the relationship and wants to break up, but is anxious about telling him.

Think about "what is the worst that could happen?" in a situation and write down your thoughts. Keep in mind that there is no right or wrong here. Write down anything that comes to mind without judging, even it seems silly or ridiculous. Once you have written down a thought, ask yourself "if that comes true (the thought you have just written down), what is the worst that could happen?". Repeat this process until you can't think of anything else. Here is what Diane wrote:

Worst-case scenario:
He will be very angry with me and throw me out of the flat ➔ I will have to move ➔ I'm going to be alone and miserable ➔ I'll never find a partner again ➔ I'll be sad and lonely for the rest of my life

Thinking about the worst-case scenario can be quite helpful for identifying your fears and worries. In the example you can see that Diane is not just afraid of her boyfriend being angry or having to move, but also of being lonely and depressed.

Now, repeat this process again for the best-case scenario: "what's the best that could happen in this situation?", "If that happens, what's the best that could happen then?". Here is what Diane wrote:

Best-case scenario:
He will understand, as things didn't go very well recently ➔ We will break up without much of a drama ➔ I'll be relieved that I had the courage to bring it up ➔ He'll help me to find a new place ➔ I'll move and start a new chapter in my life

Have a look at both scenarios. Most likely, neither of them is very realistic. People, who worry a lot, will often consider the worst-case scenario as more likely, simply because they spend much more time thinking about it. That's why thinking about what could go right in a situation can be helpful. Finally, think about what is realistic to happen in that situation and write it down. Here is what Diane wrote:

Realistic scenario:
We might have a fight, but he will have to admit that things cannot continue like this ➔ It will be hard, but we will break up ➔ I'll be sad about the end of our relation ship, but also relieved ➔ I have to find a new place to live, but he will give me enough time ➔ I'll move and it will be ok

Technique 4: Dealing with uncertainty
Worries are often amplified by the belief that you have to know and plan everything or that you feel like you have to be prepared for every possible problem. Think about this for a moment. There will always be things that are outside of your control or uncertain. Furthermore, worrying doesn't make things more certain.

Dealing with this normal uncertainty of life can be quite difficult, but is also the key to reducing worrying. For worriers, uncertainty is almost always associated with a negative outcome, although this is technically incorrect. Not knowing whether your lottery ticket for next Saturday might win or not, does not mean that it won't win (even if the chances are fairly poor).

Let's have a look at two ways of dealing with uncertainty: 1. Examine the pros and cons of accepting uncertainty and 2. Embracing uncertainty.

1. Just like with any behaviour, you can examine the pros and cons of accepting uncertainty. Think about the short- and long-term consequences. If you accept that something is outside of your control you don't have to take action and your worries will reduce. The costs may be that you will feel a bit more anxious initially. On the other hand, if you don't accept the uncertainty, you will continue to worry.

2. Uncertainty can also be something positive and quite exciting. Think about a surprise birthday party for you, the excitement of participating in a raffle or the feeling when you wait for your internet order. Can you think of other examples where a bit of uncertainty is a good thing? What feelings does this type of positive uncertainty generate for you? What are your beliefs about this type of uncertainty? Think about what you could do to embrace uncertainty for a week and what motto or life philosophy would you need to live by. Try to challenge yourself to do one thing each day according to this new philosophy for a period of one week.

Technique 5: Mindfulness
People who worry or ruminate a lot live their mental lives regretting things that have happened and wishing they could change them or trying to control the future. This makes them miserable and anxious and keeps them stuck. Mindfulness describes the ability to stay in the "here and now" of a situation without wanting to control or judge it. Imagine how an observer would perceive a situation without having the thoughts of the people involved.

With a simple breathing exercise, you can practise being mindful and focussing on the here and now. In a situation when you find yourself worrying about something, try this exercise to help you relax a little bit and focus on the present. Why don't you try it out right now? It only takes three minutes. You can also download an audio version of the instructions here for this exercise and put it on your MP3 player.

1. Sit down in a comfortable and upright position. If possible, close your eyes and ask yourself the following questions:
    a. What is my experience right now?

b. What am I feeling?

c. What thoughts are going through my head?

d. What physical sensations can I perceive?

2. Now slowly focus your attention on your breathing. Notice each in-breath and to each out-breath as they follow, one after the other. Feel how your upper body expands when you inhale and how it relaxes when you exhale. Notice how your breathing get slower the more you relax.

3. After a few minutes, open your eyes again and come back. You can stretch a bit if you feel like it. How do you feel? Do you feel different than before?

To challenge worry, it is important that you remind yourself that your worries are just thoughts. Just because you are thinking something, it doesn't mean these thoughts are true. You have learned in the introduction how your thoughts influence your feelings, physical sensations and your behaviour. Try paying attention to this when you start worrying. This process helps you gain distance from your thoughts.

Reflection box

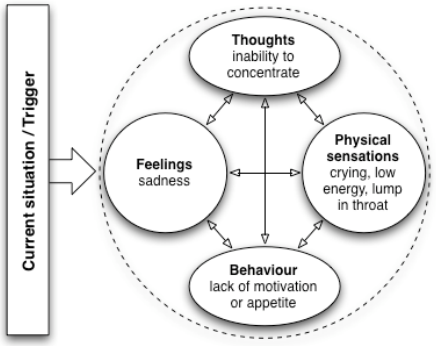
You can deal with excessive worrying by setting aside some worry time, distracting yourself from worrying, gaining a realistic view on the situation, learning how to deal with and embrace uncertainty and being mindful in situations when you worry a lot.

E.5. Module on dealing with difficult emotions

PLUS
Personality and Living of University Students

Why we have emotions

We respond to our environment or internal triggers with emotions or feelings. Internal triggers can be thoughts about past or future events. As we have seen in the introduction, emotions can influence our thoughts, our behaviour and our body. Have a look at an example of how sadness affects the areas mentioned.



Did you know that our brain has a fast and a slow road for processing emotions? The fast road is responsible for creating an immediate response to a situation, whereas in the slow road, more information is processed to reappraise the situation and (if necessary) correct the response from the fast road. Imagine you are walking in a busy street and suddenly you hear a loud bang. Your initial response may involve being startled and your heart may beat faster. You also instinctively turn your head to where the noise came from (fast road). However, you then see that it was just some construction workers dropping something and you realise that there's no threat and continue walking (slow road).

By observing an isolated tribe in Papua New Guinea, researcher Paul Ekman identified six basic emotions that can be found in any culture: Anger, Disgust, Fear, Happiness, Sadness and Surprise. However, there are more complex, so-called secondary emotions (or feelings) such as affection, jealousy, optimism, shame or sympathy.

Being able to feel emotions is an important evolutionary mechanism. Emotions guide our actions, help us communicate our mood, needs or goals, and can influence the behaviour of the people around us. In this module we are going to have a closer look at how emotions work, how to deal with difficult emotions and how to build positive emotions.

For a moment, think about the usefulness of different emotions for you and others. Have a look at the emotions below and think about what positive things they do for you and others.

Emotion	What positive things does this emotion do for you or others?

Anger	
Sadness	
Shame	
Jealousy	

Sometimes emotions can be troubling. Below are common problems that people experience:

1. Too much or too little emotion: Emotions can make your life harder when very intense or distressing emotions occur very often or for a long time. Emotions are a response to trigger situations, but sometimes this response can be out of proportion to the actual threat of the trigger, just like an oversensitive fire alarm. The opposite of that would be the inability to experience emotions, regardless of whether they are positive or negative.

2. Reading emotions: For some people, recognising emotions in themselves and others is quite difficult. This makes it hard to act appropriately in certain situation, getting your needs met or to interact with others.

3. Expressing emotions: People differ in the way they express emotions. One reason for that are differences in personality. Another reason is cultural differences. Whereas the British are sometimes considered as holding back on their emotions, Italians e.g. are known for expressing emotions more strongly. The way you express emotions is also shaped by your family. In some families emotions are expressed openly, whereas in others they are not. Sometimes families also have implicit or explicit rules on expressing emotion such as "Crying is for sissies", which influence they way we express them. One of the most unhelpful ways of dealing with emotions is bottling them up. Some people ignore or suppress emotions for a long time and over time they become more vulnerable or easily overwhelmed by emotions. This not only cuts you off from your needs or from other people, but this bottle of emotions will also "burst" when you least expect it.

When people have difficulties in dealing with emotions, they often engage in a variety of unhelpful behaviours. Unhelpful behaviours, although being helpful in the short-term, make problems worse and life more difficult in the long-run. Let's have a look at a few common unhelpful behaviours:

Emotions and eating

Eating itself is of course not an unhelpful behaviour. The opposite is the case; eating is essential and is a source of pleasure. It is normal to eat more than usual on occasions such as birthdays, weddings or dinners with friends. However, when people overeat to deal with stress, emotional difficulties ('comfort eating') or boredom this can be problematic. In those situations overeating may be accompanied by a sense of losing control and not being able to stop. This is called binge-

eating. Episodes of binge-eating can be linked with feelings of shame or disgust, which makes you feel even worse in the long-run.

The other extreme is when people reduce their food intake or become obsessed and controlling about the amount they eat or what they eat when they experience difficulties with emotions.

Emotions, drink and drugs
Most students enjoy having a few drinks with their friends. However, repeatedly exceeding safe drinking limits or drinking to deal with emotional difficulties is harmful and an unhelpful behaviour. Also think about why you drink or use drugs in a particular situation. If for example, you feel like you have to, to fit in with your friends or you drink or use drugs to be more relaxed in social situations, this may indicate that you are using alcohol or drugs to deal with emotional difficulties (i.e. insecurity and anxiety).

In the short-term drinking can be fun, it may make you relax a little or forget your worries for a while. However, neither drinking nor drugs can solve your problems and may even make them worse over time. Furthermore, you may suffer from the after-effects of alcohol and drug use, such as hangovers or withdrawal symptoms. Excessive drinking and drugs can also put a financial burden on you.

Dealing with difficult emotions successfully

Difficult emotions are part of life and being able to deal with them is an important skill. A common misconception is that this means pushing these emotions away so that you don't have to experience them. As we have seen, the opposite is the case. For example, think about experiencing a loss or illness in your family, breaking up with a partner or doing less well than expected in an important exam. Such events are very upsetting and it is absolutely normal to struggle with them and feel emotionally overwhelmed. It is not nice to feel disappointed, guilty, sad or angry, but that is why it is important that you are able to deal with these emotions in a helpful way. In some situations, people experience negative emotions in the absence of any clear triggers. This can be particularly distressing or confusing.

You can improve the way you deal with difficult emotions in three steps by:

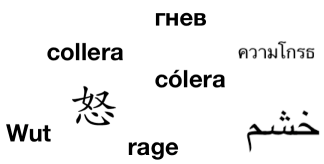
1. Recognising and evaluating your emotions
2. Recognising unhelpful behaviours
3. Using helpful behaviour

Let's have a look at the first two steps. The best way of getting to grips with them is to start an emotions diary. Ok, this probably sounds a bit funny, but it doesn't take much time and gives you an interesting insight in how you deal with emotions. It also allows you to practice recognising and naming your emotions, which is something many people actually find quite difficult.

To do this, simply try to record the following aspects of a situation:

1. What happened in the situation? Write a brief description of what was going on.

2. How did you feel? Write down what emotions you experienced. If you struggle with that, have a look at this list of emotion words to help you describe your feelings. If English is not your first language, why not write it in your first language? Also rate the intensity of the emotion(s) that you experienced on a 0 to 10 scale. Finally, write down what need the emotion you experienced was signalling to you.



3. How did you react in this situation? What did you do to deal with the situation and the emotions? Did this change the type and intensity of the emotion(s) you felt?

4. Was the way you dealt with the situation helpful or unhelpful? Think about the short-term and the long-term consequences of your behaviour and write them down. In this context, also think about whether the need that your emotion signalled to you was addressed.

Try to record your emotions for a week. It may not always be easy to link your behaviour to a particular situation or an emotion. Sometimes you may engage in unhelpful behaviour although it seems as if there was no reason to do that at all. However, think about how bottling up emotions sometimes leads to unexpected “bursts”.

The key to successfully dealing with difficult emotions is not to engage in unhelpful behaviour, but rather do helpful ones. Once you have worked with your emotions diary for some time, you should be able to recognise if you engage in unhelpful behaviours and perhaps also recognise patterns (e.g. times when you are more likely to experience difficult emotions or engage in unhelpful behaviours). You may find that some emotional situations signal a clear emotional need to you from which a particular course of action follows (e.g. if you were angry with a flatmate because they behaved inconsiderately this may signal the need for you to assertively discuss this with them).

However, there will be a number of emotional situations where there isn’t a clear course of action or where you feel so intensely emotional that you first need to calm yourself down a bit or cool off before thinking again about what action is required. Below is a list of some helpful behaviours that you could try in such situations.

- Going for a walk: Sometimes, getting some fresh air can really help in situations in which you feel sad, depressed or angry. Think about places or routes you like. Green, leafy environments such as a park or field arte particularly soothing.
- Having a warm drink: This may sound a bit daft, but just making yourself a hot drink can sometimes be the fastest and easiest way to soothe or calm yourself a little bit. Think about what you like. A nice tea or a hot chocolate or perhaps a fancy coffee from a coffee place?
- Structuring your activities: When people have low mood, they often find it very difficult to manage everyday activities and tasks such as cooking a meal or doing the laundry. Just like you plan and structure your work tasks, you can try to structure everyday tasks. Think about what needs to be done, what has priority and then schedule some time for each task.

- Making your environment pleasant: again, this may sound silly, but is actually quite effective. When you have to deal with difficult emotions, it's good to have a safe and nice place where you can retreat. In most cases this could be your room at home, but it can also be another place. If you feel a bit overwhelmed by emotions, it might be helpful to just spend some time making your room nice. Tidy it up, if it's messy or think about other way of making it a pleasant environment for you. Could you add some plants? Do you have some nice photos that could go on the wall?

- Physical exercise: Doing some exercise is one of the most effective ways to lighten up your mood. When you engage in physical activity, your body produces endorphins, which make you feel better. You don't have to be sporty to do this, a 5-minute run could be a good starting point if you are out of practise. Think about what activities you would enjoy, but also about what you can do right now or at least easily.

- Sleep hygiene: Many students have difficulties with their sleep in their first years at uni or at particularly stressful times. When you don't get enough sleep, you cannot concentrate and become irritable. Lack of sleep can make it more likely to be overwhelmed by emotions and also more difficult to deal with them. Do you know how many hours sleep you'd need to feel fine and function well? Getting enough sleep gets even more difficult if you go out a lot and your rhythm gets messed up every weekend. However, if you stick to a few rules, you can improve the quality and the amount of your sleep quite easily:

    - Go to bed and get up always at the same time: This can be difficult, but it should also be the first thing you try if you experiencing difficulties with your sleep. Try to choose reasonable hours to ensure that you get enough sleep.

    - Avoid naps: Some people find it easier to have a quick nap and then feel refreshed again, but naps can also confuse your natural sleep cycle.

    - Avoid alcohol or caffeine just before going to bed: Both substances affect the quality of your sleep.

    - Make your bed comfortable and keep your bedroom cool and aerated

    - Try to block out noises and light at night time.

    - Use you bed for sleeping and sex only: Your bed shouldn't be an office, cinema or dining area.

    - Develop a ritual before going to bed: E.g. some minutes of reading, a shower, or a relaxation technique.

    - Don't force it: If you struggle falling asleep, get back up and do something boring in another room. Go back to bed when you feel ready. Make your alarm clock face away from your bed!

    - Don't take your worries into bed: Some people have difficulties sleeping, because they ruminate and worry when they go to bed. Don't take such negative thoughts

into bed. Instead, have a look on the module on anxiety and worry to help you deal with such thoughts

If your sleeping problems remain, consider consulting a doctor about this. Don't forget: some people simply need more sleep than others. Always pushing your body to the limit (e.g. by going until the early morning) is an unhelpful behaviour and will cause more problems in the long-run.

- Going to places where you are not alone: When you feel overwhelmed by emotions, it can be really helpful to speak with someone about it. However, this is not always easy or possible. Sometimes it can already be helpful to go somewhere where you are not alone. You don't necessarily have to interact with other people in that situation, but simply being around them may help. That could be in a café, a library or a public place.

- Talking to someone: As mentioned, speaking with others about how you feel can be really helpful. Make sure that you talk to someone, who has time for you and wants to listen to you.

- Write about it: Another way of expressing your emotions is to write about them. If you find it difficult to talk with someone else about how you feel, writing about it can be a much easier first step. In a study with university students in Denmark, students were asked to write about an emotional event. Eventually those students showed improved health (they went less often to their GP) and even better grades. Chose a particular event and then write about it for not more than 15 minutes on 4 consecutive days. Write by hand, to avoid trying to re-edit sentences until perfection. This technique is not really about the piece of writing you produce, but about the process of writing it.

The activities listed here are examples of things you can do when you feel overwhelmed by emotions or have to deal with negative emotions. There are many others. Try to think of other activities that you could do. Make sure that the activities are something you enjoy doing and feel motivated to do.

Embracing the positive

Knowing how to deal with difficult emotions is an important skill, but it is only one aspect of the striving for happiness and well-being. If you want to feel good about yourself and your life, you need another skill: the ability to embrace the positive.

A new area in psychology is called positive psychology and has been majorly influenced by the work of Martin Seligman. He wrote several books on the topic of happiness and life satisfaction (e.g. Authentic Happiness). Seligman has developed a whole range of techniques that make people feel better. Here we are going to introduce two of these for you to try out.

What went well

When people feel a bit low or depressed, they become strongly focused on things that went wrong or not so well. Although this tendency to focus on the negatives of a situation is a useful evolutionary skill, but it also makes us feel worse and creates a vicious cycle.

For the next week, set aside ten minutes each day to write down three things that went well on that day. You should ideally do this just before you go to bed. For this task, it is important that you actually write these things down and not only think about them. It doesn't have to be a life-changing event, simply think about small things that went well. Next to these things you should write down why they happened and what you could do to make them happen more often. This is a bit more tricky, but you will find it easier as you go along. Have a look at the example below.

23/05/2011	Today, I had a really nice phone conversation from my best friend, who is currently in Spain.	I haven't spoken to her in a while and thought it would be nice to phone her up. I could regularly phone her from now on.

This task is very easy and if you can do this for a week or even longer, it will make you feel better.

The gratitude visit

Can you think of one person in your life or from your past, who did or said something that had a positive influence on your life? Yes? For this task, you could write a short letter of gratitude to this person in which you talk about what this person did for you and how this has affected your life to the positive. You could call the person up, say that you really would like to meet with him/her and then read the letter word by word. It may sound a bit strange, but sharing your gratitude with another person can be an amazing experience and will make you feel happier and less depressed.

Appendix F - Control intervention

F.1. Accommodation tips module

HOUSING

If you are thinking of moving or are just looking for some general advice on student accommodation, this guide is for you. As a student you can chose between different options for accommodation:

- **Halls of Residence** are university owned buildings for student housing. Halls very often are only available to first year student, but offer a great opportunity to meet new friends and settle in. The advantage of student halls is that they offer good value for money and are often located close to your university.
- **Private Halls of Residence**: This type of properties is similar to student halls, but owned privately. Although usually more expensive than the university ones, they may offer comfortable housing with a good mix of privacy and sharing.
- **House/ Flat Share**: Most students decide to share a flat or house together with others. Finding a shared house is great if you are on a tight budget, like to live with other and want live in a particular are. However, when moving into a shared house or flat there are a few things to remember.
- **Room in a Private House**: Living with a resident landlord can be an option if you don't want to share with too many other and look for a well-maintained accommodation. However, try to find a place where you are guaranteed a private room to which the landlord has no access without giving notice.
- **Private flat**: If your budget allows it, you can rent a flat or house for yourself. Keep in mind that costs of living are very high compared to shared accommodation, as you have to cover the full rent and all bills on your own.

Additional costs:

When you start thinking about your budget, it's important to keep in mind that you will have a number of additional costs on top of you rent. Those can be:

- **Utility bills:** The costs for bills can quickly add up. In a shared accommodation, water, gas and electricity can cost between £15 and £30 per week, depending on the number of people sharing, the time of the year and the type of property. To keep your costs down, try to save energy wherever you can and encourage your housemates to do so, too. When looking for a property, check the energy rating and watch out for energy saving measures (insulation, double glazing…). Many energy suppliers offer slightly lower rates if you pay by direct debit. This also makes your utility bill costs more predictable.
- **TV Licence**: If you (or your housemates) own a television or a computer connected to the internet and use this equipment to watch live television, you have to get a TV license.
- **Internet**: What would student accommodation be without an internet connection? Depending on the download speed and download limit, this may quickly add another £10 to your monthly bill.
- **Council tax**: If you are a full time student, you are exempt from council tax. Your university can help you with getting a exemption certificate for the council. However, when sharing with others, who are not students, council tax has to be paid for the property and your housemates may want to distribute the costs.
- **Insurance**: Regardless of whether you are sharing with other or live on your own, it's important to get your valuables insured. Many insurance companies have special student deals.

Finding a place to live

Finding a home can be very difficult and may seem like an impossible challenge initially. However, especially for students there are plenty of ways to find a new home. Before you begin your search you should ask yourself a few questions to narrow down your search criteria:

- What's your maximum budget per week or month?
- Where would you like to live?
- How will you get to Uni and elsewhere?
- Do you want your own place or do you want to share?

A few general rules may help you with answering these questions. Generally, sharing a house or flat with a few other people is cheaper than renting your own place. Don't forget that the costs of bills significantly contribute to the overall costs. Again, sharing with other people is often cheaper. Areas with good transport connection are often a bit more expensive than areas with fewer transport options. If you want to rent a place for yourself, you will have to get a contract usually for at least six months. If you are looking into student accommodation provided by the university, make sure to start very early. Very often, students start looking around springtime for their accommodation for the academic year starting in autumn. The private market is usually a bit more flexible, but finding a place is easiest during spring and summer.

Once you have decided on these questions, you can start your hunt for the perfect home. There are a lot of websites if you are looking for flats houses or house shares. Make sure to check out a few to get an overview of what's available. In most cases these websites are free, but some require registration or even or small fee to view available places or contact people. If you already know a few people where you study, why not ask them, too?

Once you have identified a potentially suitable place, it's time to have a look. Online maps and street views may already offer some information about the area or the property, but in any case you will need to have a look for yourself. If you haven't got much experience in the housing market, it's highly recommended that you spend some time viewing a few places to get a feel for appropriate rents. Never pay for a viewing! There is no reason why you should have to pay money to view a place and such offers will most likely be a scam.

Especially when sharing with other people, you should try to meet all future housemates before moving in. How old are they? What do they do? Your home should be a place where you feel safe and can enjoy yourself. Trust your instinct and think carefully whether you can imagine living with the current housemates. Think about what standards you have for your future housemates and whether you would fit these criteria. What is your attitude towards housework? When is your preferred bedtime? Do you smoke? The key is to find people that are similar to you, at least when it comes to house aspects.

If you are looking to rent a flat or house for yourself or with others, consider contacting a local letting agent. Letting agent will charge you a few for referencing (between £20-£100) and for setting up the contract with the landlord (up to £200). Letting agents may not always be the most pleasant people walking on the planet, but they can be helpful, especially when renting a property for the first time. You can register with different letting agents in an area for them to alert you when they have a potential property. However, you should still regularly contact them to check whether they have something suitable for you. When viewing a property, ask for how long it has been on the market, the amount of the deposit and intended length of the contract. If you decide to put an offer on the property you can ask for a contract that suits your needs. Most contracts will run for 6 to 12 months. It may be useful to have a break clause added, which offers you and the landlord to end the tenancy (for whatever reason) before the end of the contract, but with reasonable notice.

Deposits and inventories

When moving into a private property, you will have to pay a deposit. The deposit usually is between 4 and 6 weeks of rent and you will get the full deposit back after the end of tenancy, assuming that you haven't damaged the property.

Since 2007, every deposit is held with a Tenancy Deposit Scheme (TDS). If a landlord wants to keep a part of your deposit, he or she has to register a dispute with the scheme. This is to protect your rights as a tenant and to make sure that landlords don't just keep some cash for no reason.

An inventory is a list of the contents and the condition of a property at a certain date. Your Landlord should provide you with an inventory at the start of your tenancy and you may be charged for it. Ideally it should contain pictures documenting the condition of the flat or house. It is important that you take the time to go through the inventory in detail and point out inaccuracies rather sooner than later. Many inventories will contain a clause stating that if you do not request amendments with a certain time you are deemed to have accepted the document. Any disputes about the deposit at the end of the tenancy will be resolved by reference to the inventory.

Moving in checklist

1. Make sure you have a copy of the signed contract

2. Take photos of every room – that way you have a record of what condition the house was in when you first moved in.

3. Make sure you have an inventory telling you what is in the house – if there is anything that is missing or broken, tell the landlord in writing as soon as possible.

4. If the house is a mess and hasn't been cleaned properly by the last tenants then take photographic evidence and tell the landlord as soon as you can. (Although if it's not too bad then it might actually be quicker to clean the house yourself and getting some compensation from the landlord.)

5. Take gas and electricity meter readings the day you move in. Then contact your gas and electricity supplier and give them the readings, explaining that you are the new tenants. If you forget to do this then you might end up being charged for bills run up by the previous occupants.

6. If you have a television or watch TV on your computer or laptop then make sure you buy a TV license: www.tvlicensing.co.uk

7. If all the members of the household are full-time students then you are exempt from Council Tax. You need to let the Council know by filling out an exemption form that you can normally download from your Council's website.

8. Make sure the house is secure. Check that all the doors and locks work and that the windows all shut properly. If your house has a burglary alarm then USE IT! If you have anything really valuable in the house then consider getting contents insurance.

F.2. Money saving tips module

Money saving tips

Students have been short on cash for generations. With rising tuition fees and living expenses it becomes even more difficult and demanding for student to manage student living. This guide was designed to give you some tips on how to save money and how to spend it wisely.

To begin with, moving away from home and taking responsibility for your own finances can be a little overwhelming. A good way to stay on top of the different costs of University living is to make a budget. This will give you a clear idea about your financial situation and will allow you to check you have enough money to meet your priority needs. Budgeting helps to avoid debts piling up and gives you an idea of areas of spending where you could cut back.

Make a list or spreadsheet of how much money you get every month (or every week) and how much money you spend. This may sound like a terribly boring and obsessive task, but it can be really helpful in managing your finances. A few tips can make keeping record of you spending even easier:

- Don't use you debit/credit card! Instead, get cash and don't forget to get a receipt with it. That way you don't have to keep track of every single item you buy, but have at least information about how much you have withdrawn from your account and how long it lasted.
- Check your account balance regularly. The transaction on your bank statement can help you making your budget plan.

Once you have established, how much money you get and spend, it's time to have a look at how you can make improvements. The main costs of being a student are:

- Accommodation
- Tuition fees
- Essential amenities and expenses such as food and utilities
- Costs related to study
- Non-essential expenses (such as beer!)

Try to determine how much you spend every month for each of this category. The biggest saving potential is usually amongst the essential amenities and the non-essential expenses. Have a look at our money saving tips below to get a few ideas.

Budget Tips

Transport

If you use public transport a lot then buying weekly or termly bus / train passes can be cheaper than buying tickets on the day. If you are aged between 16 and 25 then get yourself a Young Person's Railcard – it saves you loads on rail travel as you only pay 2/3 the price of an adult ticket. Book train tickets well in advance to save money. Students in London are also entitled to a student oyster card, which saves you 30% on weekly, monthly or annual travelcards. For short distances, try walking or riding a bike instead of getting taxis or filling up the car with petrol.

Utility Bills

Take some time to shop around for the cheapest gas and electricity supplier. To cut down bill costs turn off electrical appliances before leaving the house. Ensure everyone in the house has their name on the bills - that way you are all jointly liable. Try to save electricity and encourage others to do so. For example don't have electrical devices on stand-by for a long time, unplug your phone and laptop charger when you don't use them and use energy saving or LED light bulbs.

Telephone & Internet

Again, take some time to look for the cheapest package. If you are prone to big mobile phone bills then it may be a good idea to use a pay-as-you-go phone so you know how much you are spending. If you do choose to have a contract phone then don't forget to put some money aside for the monthly bill! Carefully think about whether you need expensive services such as mobile broadband all the time. Consider using the internet to call people, It's either free or often cheaper than using your landline or mobile

Study related costs

You can often get free stationary like pens and sticky notes at freshers' events. Your university library will have most of the books for your studies. Use the library instead of buying books. If you have to buy a book, consider getting it second hand. You can also save money by using free software on your laptop (Linux, Open office…) and they are usually fully compatible with other computers or formats.

Food

Buying food on campus or in town can be expensive. Save money by bringing in a packed lunch from home. When doing a supermarket shop try to make a list of things you need and stick to it! You can save money by buying supermarket own brands instead of brand names, and by buying in bulk. If you head to the supermarket just before it closes then there'll often be loads of reduced items. Sharing food shopping with housemates can help to reduce costs and reduce food waste.

If you have access to a food market, have a look whether you can buy meat, fruit and vegetables cheaper than in the supermarkets. If you can, buy food in larger packs (e.g. canned food, frozen foods), as this will be cheaper. It also saves you time, as you don't have to go to the shops as often.

Although sometimes delicious and practical, takeaways and convenience foods are very expensive and sometimes not the healthiest choice. If you want to save money, try to avoid them as often as you can. Instead, learn how to cook and prepare meals from scratch instead of reaching for the take-away menu or the ready-meals. You'd be surprised how easy it can be and it will save you a lot of money! Cooking can also be a great opportunity to get together with your housemates and friends.

Books

Some courses require a lot of textbooks. If you live with friends on the same course then why not club together to buy the books you need and then share them. At the end of the year you can sell your second-hand books to students in the year below.

Recreation

Have friends over to your house for dinner or drinks before you go out. If you do eat out, watch out for special offers or 2-for-1 deals. Clubs sometimes offer cheaper entry if you get there early. And it's also worth looking out for flyers to get you in for free! Try to leave your debit/credit cards at home when going on a night out – take only enough money to last the night and you'll avoid losing

your credit card and buying everyone at the bar a drink! Organise your journey home before leaving to avoid having to call a cab.

Credit Cards

If you do decide to get a credit card then try to use it only for emergencies. If possible try and get a card with 0% interest. Always try to pay off more than the minimum payment. And don't forget that credit card bills can quickly build up and they don't magically disappear!

Savings

It's a good idea to open a savings account so you can deposit the money you need for bills or to deposit regular amounts to help save for treats such as holidays etc.

Jobs

Getting a part-time job may be an option if you struggle for money or want to save money for something in particular. A few hours of work on the weekend e.g. can make a significant contribution to your overall budget. However, keep in mind that you will be sacrificing time that could have been devoted to studying. Getting a job during the holidays can be a great idea if you don't want to sacrifice time during the term. Think about whether you could even find a job that allows you to gain experience in your field. Make sure to organise holiday job early enough, as many student might have the same idea.

Shopping

May high-street shops offer student discounts. Check online for special offers or available discounts before going shopping. However, don't forget that you save more money by not buying something (especially things you don't desperately need) than going for every offer available! If you know exactly what you want to buy, have a look at price comparison websites or online retailers, they may offer the same product cheaper. When buying books, CDs, DVDs or other items you may want to look into buying them second hand and save a lot of money.

Summary

- Remember little costs add up too – so make sure you budget for them!
- Check your bank balance regularly so you can keep on top of your finances. Using online banking is a really good way of doing this.
- If you do have money worries or are struggling with credit card repayments then don't ignore it – get help as soon as possible.
- If you are not too busy with your course then try to get a job to save some extra cash.
- Ask for a student discount in bars, shops, restaurants etc.

F.3. Time management and study skills module

Welcome to university!

The transition from school and home to university is an exciting and difficult one. Whether you are a fresher or have been studying for a few years now, you have a lot of responsibilities: organising your courses, making sure that there's enough food in the fridge or getting some sleep. For most students, the first years are an unforgettable and positive experience, but it can also be a bit overwhelming at times.

Regardless of whether you have just finished school or are returning to university after 10 years of working, time management is a skill that it hard to learn and essential to be able to cope with the demands of university. If you manage your time wisely, there will be no need to compromise between enjoying student living or succeeding in your studies.

On the following pages there'll be lots of tips, which you can use to make the most of your time at university. But it doesn't stop here: you can apply these skills to other areas of your life and more importantly use them successfully in your future job.

Goal setting

When you desk is full of papers and book, your sleep has been cut down to a minimum and your exam day is coming closer, you may find yourself asking: "Why am I doing this?". If you want to manage student life successfully, it's important to keep the bigger picture in mind.

Before we start looking at how to manage time efficiently, it's worth to spend some time looking at your personal goals. Where do you see yourself in a week, a year or ten years? What would you like to do after your degree? Take a piece of paper and write down a few goals for:

- This month
- This year
- The next two years

Don't worry too much about what to write down and just put down what comes to mind. Your goals are quite likely to change a bit (or even a bit more) over time, but it's important to have some ideas that help you plan your activities here and now.

Take a look at your goals and think about how much of what you did today contributed to these goals. How actively do you think are you working on these goals?

In a next step, try sub-dividing these goals into more manageable pieces. Decomposing your goals is very useful, as it tells you exactly what you have to do right now and also prevents procrastination. We'll look at procrastination and how to overcome it a bit later in this guide. For now, try braking down your goals into smaller units and then break these units down further until you get an idea of what's necessary to achieve the goals.

One very common mistake is to set very high or unrealistic goals. Especially in the beginning of their curse, many students are highly motivated and want to achieve a lot. That's a great resource,

but when your goals are too unrealistic, you can quickly become discouraged when things don't work out as planned. Realistic goal setting includes that you realise your strength, weaknesses and know you limits.

Now that you are a bit clearer about your goals, it's time to look at techniques that can help you achieve your goals.

Improving time management

Step 1: Track your time

If you have already had an opportunity to look at the module on how to save money, the following technique will be very familiar. Before you can improve the way you manage your time (or spend money...), you need to establish a baseline on how you currently spend time. Some people find this easier than others, but even if you struggle: stick with it! Your organiser should become your best friend within the next few weeks. Tracking your time can be quite simple if you follow a few steps:

1. After roughly every hour quickly write down what you actually did during that hour. It doesn't have to be long, a few bullet point are enough. Especially if you didn't do what you planned to, write down what you did instead. This will help you later to identify patterns and improve your time management.
2. If you use your organiser a lot already, it may be useful to compare the time you planned to take for each activity with the amount of time it took you to complete the activity. To do that, you could leave some space in your organiser to fill in what you did with your time.
3. Try using categories to summarise your daily activities, such as "study","work","housework" or "travel". Feel free to use your own categories, but try not to come up with too many. Create a time logbook with different columns for each category. This will help you later to sum up the time spent for each category.

You can download a template for your time logbook here. Fill out this log for each hour of the day for one week. After that week, sum up the time you spent on each category.

Creating this summary of your time allows you to understand how much time you spend in various areas of your life. You will most likely see a difference between the amount of time you planned to use in area and the actual number of hours you spend. Spending more time than expected in one area of your life might highlight where you can improve your time management. However, tracking your time is not supposed to make you more stressed. Keep in mind that we have to spend at least half of our available time with things like sleeping, eating, washing and other essentials.

Successful time-management will involve the heavy use of planning tools. Let's have a look on how to do that.

Step 2: Plan your time

When planning your schedule for the next days or weeks ahead, try to follow the guidelines below.

- For every lecture, plan some time for revising or reading. This may not always be necessary, but it's good set aside some time to quickly look at the lecture notes again, read a recommended chapter or article; or do some homework. Make sure to exclusively dedicate some time for this each day.

- Plan time for yourself. Doing enjoyable things should be part of every single day, too. This is important for your well-being and will also positively affect your productivity. It's hard to work out the perfect balance between fun and work (which can be fun too!), but you will soon get an idea. Keep in mind that it will be much easier for you to enjoy yourself if you are on top of things.

- Make space for interruptions or deviations from your schedule. This may sound counterintuitive, but your time tracking exercise should have demonstrated that often things take longer than expected or other things come up. That's perfectly normal and just means that your schedule should have space for such events. This also makes sure that you are not immediately freaked out if things don't go according to your plan.

- STAY AHEAD OF THINGS! It sound so simple, but can make the biggest changes. Get started with task as soon as possible and don't leave anything to last minute. Try not to procrastinate. For example: if you can, read up on things before they are covered in a course or lecture. This will allow you to make the most of your courses and save you lots of revision time later.

- Focus on the moment and not on the whole day. Some days will be busier than others and if you look in your diary, it may become a bit overwhelming. However, try to stay focused on your current task and do things step by step.

- Make use of your time. On a long bus or train ride, it may be tempting to spend your time slingshotting birds into pigs on your iphone, but you could also consider doing some reading or revising.

- Schedule enough time for essentials such as eating (incl. shopping, cooking...), sleeping and other necessary activities. Remember: a busy schedule is impossible to manage if your are hungry or not well-rested.

Being organised

You may think a cluttered desk is a sign of genius. Well, maybe, but most people actually find working in a messy environment frustrating and confusing. If you want to manage your time, workload and life efficiently, it may be helpful to think about organising your stuff as well.

If you still live at home, you may still have lots of stuff in your room from your childhood or school times. If you have moved out of home, you are more likely faced with a much smaller room in halls or a shared house. Student life is an entirely new episode in your life and may require for you to make some adjustments to your room.

To be able to make use of your time effectively, being organised is essential. You should have a dedicated space for each of your belongings. A few colour-coded folders and binders, a hole-punch, some pens and perhaps some document sleeves should cover your basic stationary needs.

You should also have storage for your personal stuff such as CDs, DVDs, books, photographs etc. A very easy and effective system of organising your stuff is to think about how often you need access to it. Essentials, such as pens, paper clips or scrap paper should always be in reach. Things you need less often should go in drawers or boxes. If you receive handouts or print articles or presentations, hole punch them immediately and put them in the right folder. Use dividers to help you organises different documents within folders.

Use a similar approach to organise your files on your computer. Think about what should always be on your hardrive or what can go on a an external drive or on CDs/DVDs. Make sure to move new files (e.g. downloaded articles) immediately into the right folder and delete files you don't need anymore. Make sure to backup your personal and your work-related files as often as possible! Mac computers have a built-in backup system called timemachine and free backup software is available for PCs, such as Comodo Time Machine or XXClone. It may be a good idea to have a spare for everything such as CD/DVD blanks, printer cartridges, printing paper or other supplies. If you run out of something you can continue working and organise a replacement at your convenience.

Dealing with all the paperwork as a student can be quite annoying. If you stick to a simple rule however, things can be a bit easier. With any paperwork you can either:

1. act on it
2. file it, or
3. bin it.

Open any mail (emails, too!) immediately and decide what to do. Reply to email straight away instead of getting into the habit of flagging everything.

I'LL STOP PROCRASTINATING TOMORROW

Every student has experienced procrastination in some for or another. Procrastination is when you put off important tasks to do them at a later stage. If you think you are someone, who procrastinates a lot, don't worry. You are not alone. A large proportion of students find it difficult to manage their time and often start task when it's actually already a bit too late. However, procrastinating makes it difficult to get things done and causes a lot of anxiety. This is where the problems start.

Here are a few hints on how to challenge procrastination:

- Sometimes you may not feel "motivated" to work on something. Try doing a little bit on the task and see, whether you can get into it. Making a start and seeing progress may just be the motivation you need.
- Schedule you time. Have a look at the previous pages on how to do that
- Mix activities that you like doing and thing you have to do. Keeping this balance increases motivation for even the most annoying tasks.

- Break large projects into smaller more manageable units. This is the key to stopping procrastination. Smaller tasks are easier to manage, can be completed quicker and are more motivating.
- Find out how to optimise your work. Some people find it easier to work in groups, others don't. Find out what helps you and make use of it.
- Reward yourself for completing tasks
- Get into the habit of starting things as early as possible, preferably immediately
- Work in manageable and small unit. It's much easier to work for 60 minutes and have 10-minute breaks than it is to work for several hours without break.
- Recognise when you are procrastinating. Keeping your room and desk tidy certainly helps with getting things done, but it is also many students' favourite procrastination technique.

Efficient reading

Reading textbooks is probably not the most fun thing ever to do, but if you want to progress in your studies it's essential to efficiently read book and papers. One of the most popular techniques for efficient reading is called the SQ3R technique. SQ3R stands for Survey, Question, Read, Recite and Review. Yes, reading a chapter or article with this technique might take more time than just skipping through it, but the idea is that you get the most out of a text and don't have to read it multiple times. This is how it works in detail:

- Survey: before you start reading, get an overview of what you are about to read. Study the headings or chapter outline.
- Question: think about a few questions before starting to read. Imagine you are going to an interesting talk with a few questions in mind that you might ask the speaker. This helps you to make sense of what you read and make memorising it much easier.
- Read: Read actively. Don't just skip through a text and focus on what your reading. This may sometimes be more difficult than at other times. Think about how you can make sure your concentration is high. Trying to read an important textbook on the bus might not be the best idea, use this time for other stuff instead. When you read, make use of every information provided: text, tables, graphs, summary boxes, etc. Take notes while you read.
- Review: Think about what you have just read and covered. Have all your questions been answered? Go through your notes and add or remove information to make sense of them. Reviewing is best done straight after reading and not just before an exam. Make sure to keep your notes clear and organised. Some people like to type up their notes, but this can take a lot of time.

The SQ3R method takes a bit of practice, but using it can be a great way to boost your productivity.

Effective time-management: summary

1. Be Organized
    - use tools like calendars, lists, reminders etc to help you organise your studies (and you life)
    - keep your workplace organised and tidy
2. Plan ahead
    - Make thing happen by planning them
    - Prioritise your tasks
    - Make to-do lists for the short-term (day) and long-term (week, month...)
    - Try not to procrastinate!
3. Take care of yourself
    - Leave space for pleasant activities
    - Have regular breaks when you work
4. Use techniques to boost your effectiveness
    - When reading something, try to understand it
    - Prepare for courses
    - Use any available time (on the bus, train, tube...)
    - Ask questions when they come up
5. Stay flexible
    - Rearrange your schedule when unexpected events come up
    - Know where to ask for help if you need it and ask for it
6. Stay focused
    - Remind yourself of why you are doing all this
    - Keep a positive attitude
    - Have long-term goals and keep the “big picture” in mind